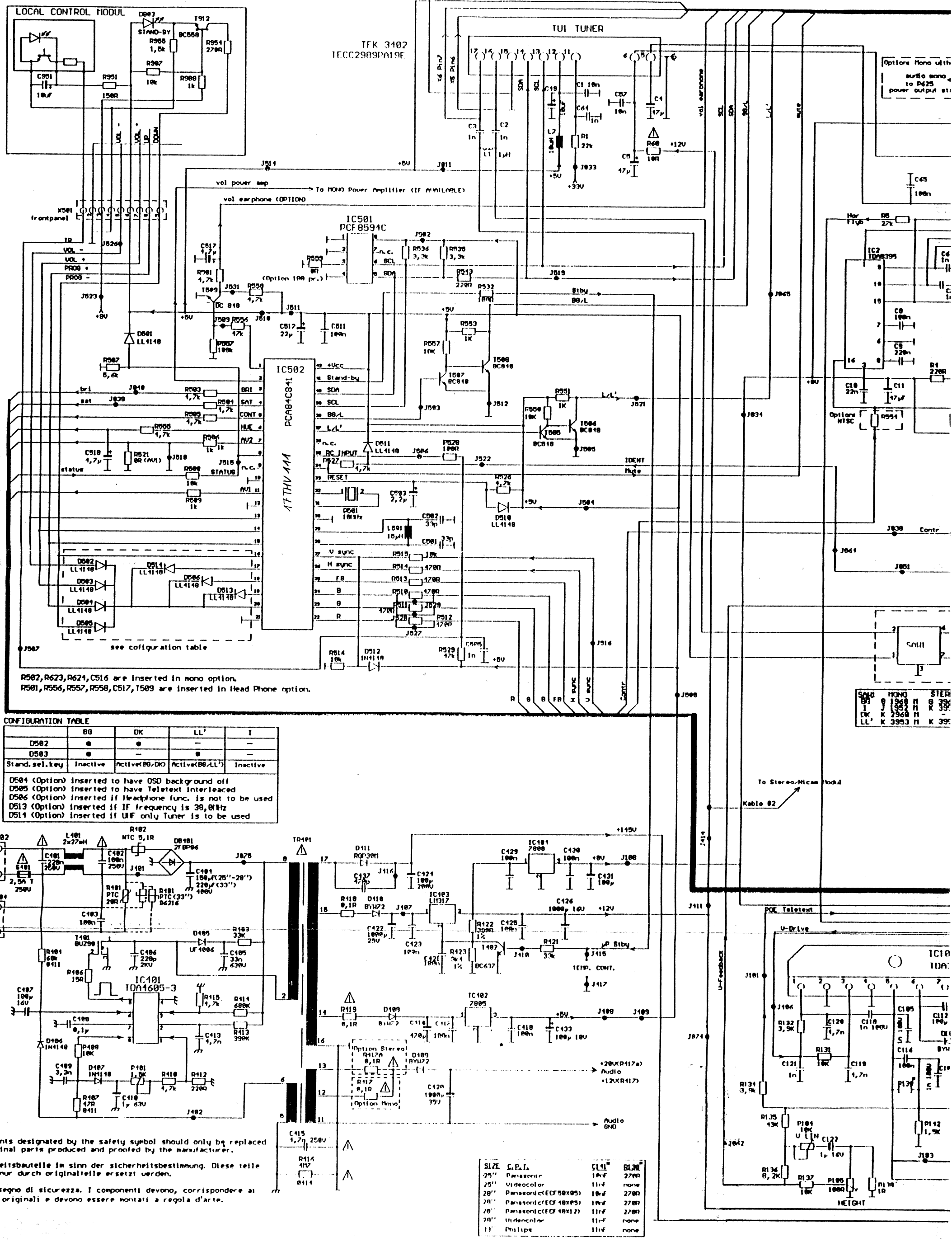
CTV CHASSIS 11.1 110°



⚠ Components designated by the safety symbol should only be replaced by original parts produced and proofed by the manufacturer.

Sicherheitsbauteile im sinn der sicherheitsbestimmung. Diese teile dürfen nur durch originalteile ersetzt werden.

Contrassegno di sicurezza. I componenti devono, corrispondere ai ricambi originali e devono essere montati a regola d'arte.

25''-28''	
R603	2,7R
R601	1,8K
R606	1,8K
C601	330nF
C605	1000µF
C607	470µF
C608	470µF
C609	330nF
C611	100nF
C613	100nF

EMC related componen
C51, C52, C56, C63, C6
C83, C84, C85, C104, C1
C617, C618, C619, C620
C622, C623

SAW	MONO		STEREO	
BG	B 1968	M	G 3963	M
I	J 1952	M	K 3953	M
DK	K 2960	M	-	
LL'	K 3953	M	K 3953	M

C141*	R138*
10nF	27ΩR
11nF	none
10nF	27ΩR
10nF	27ΩR
11nF	27ΩR
11nF	none
11nF	none

	25''-28''	33''
R603	2,7R	0,47R
R604	1,8K	3,9K
R606	1,8K	3,9K
C601	330nF	680nF
C605	1000µF	2200µF
C607	470µF	1000µF
C608	470µF	1000µF
C609	330nF	680nF
C611	100nF	330nF
C613	100nF	330nF

EMC related components:
C51, C52, C56, C63, C68, C82, C83, C84, C85, C101, C105, C617, C618, C619, C620, C621, C622, C623

EMC Components:	MONO	STEREO
L12	18µH	18µH
L13	18µH	18µH
C69	-	1n
C97	-	1n

	MONO	STEREO
R61	0R	1k
R68	0R	1k

IC1
TDA8361
TDA8362

IC601
TDA1521

Option Stereo AF Power Amplifier

audio modul option

CRT MODUL

TELETEXT MODUL Option

Teletext related components on chassis

IC5, X2, T2, C13, C68, R14 R46, R47, R48, R50, R51, R52 R55, R131, R201, R202, R203 R208, R209, R266, R266, R210 R510, R511, R512

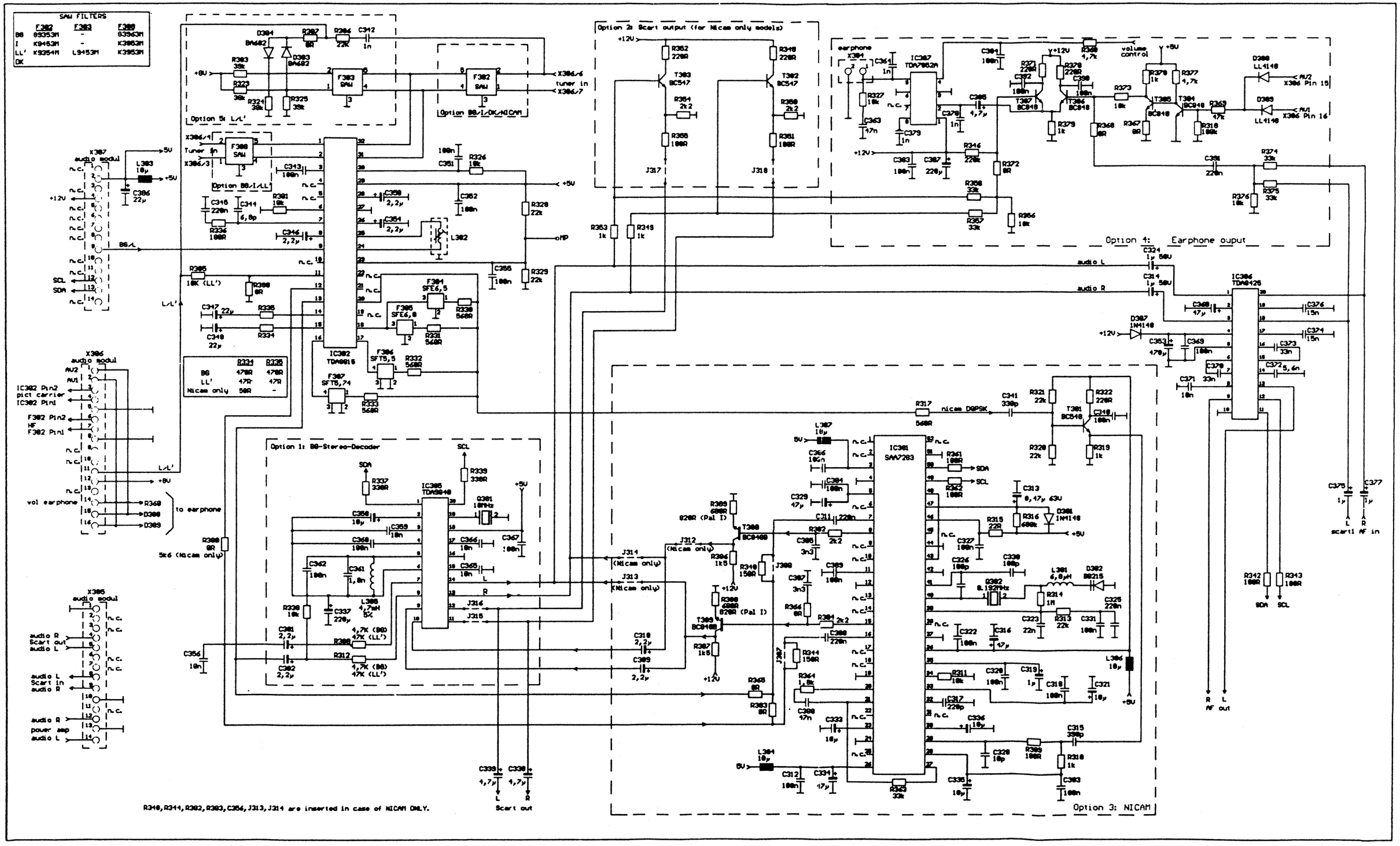
IC5
74HCT157

IC101
TDA8145

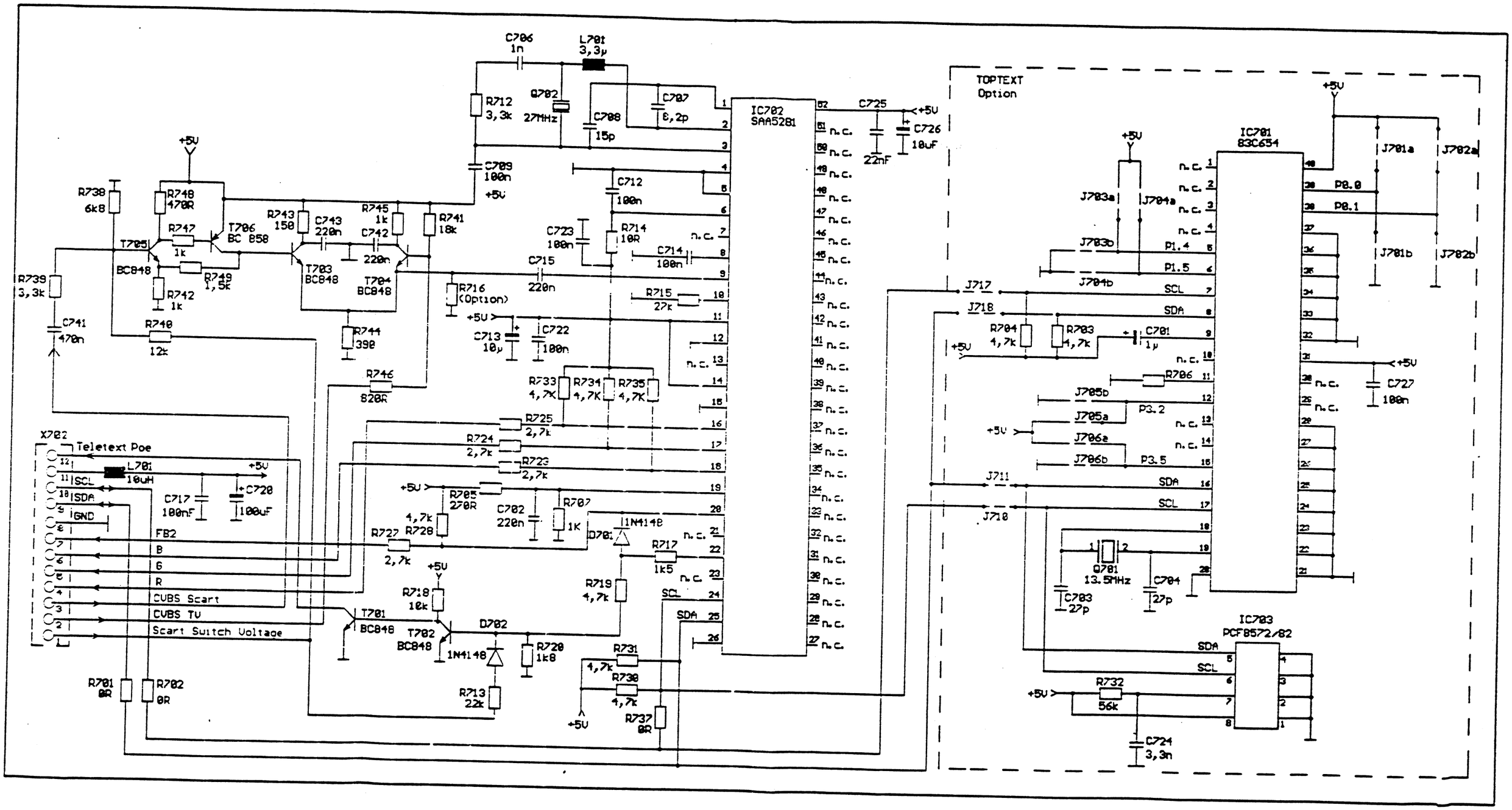
Acceleration voltage: max. 29kV.
Beschleunigungsspannung: max. 29kV.
Tensione di accelerazione: max. 29kV.

■ = R69, R70, R79, R93, J627, J628, J629 are not inserted if the chassis has Teletext option.

STEREO / NICAM MODUL (OPTIONAL)

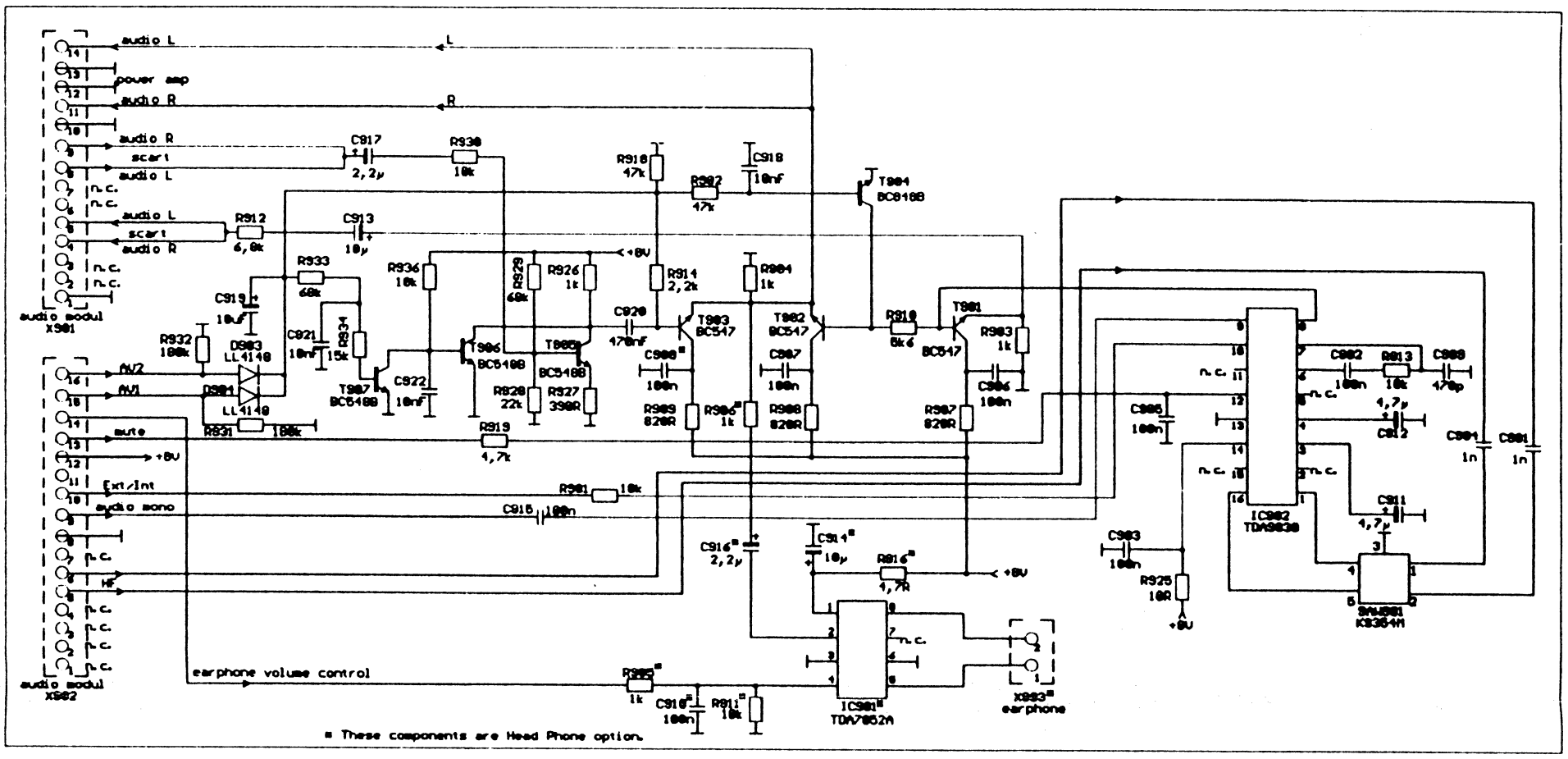


TELETEXT MODUL (OPTIONAL)

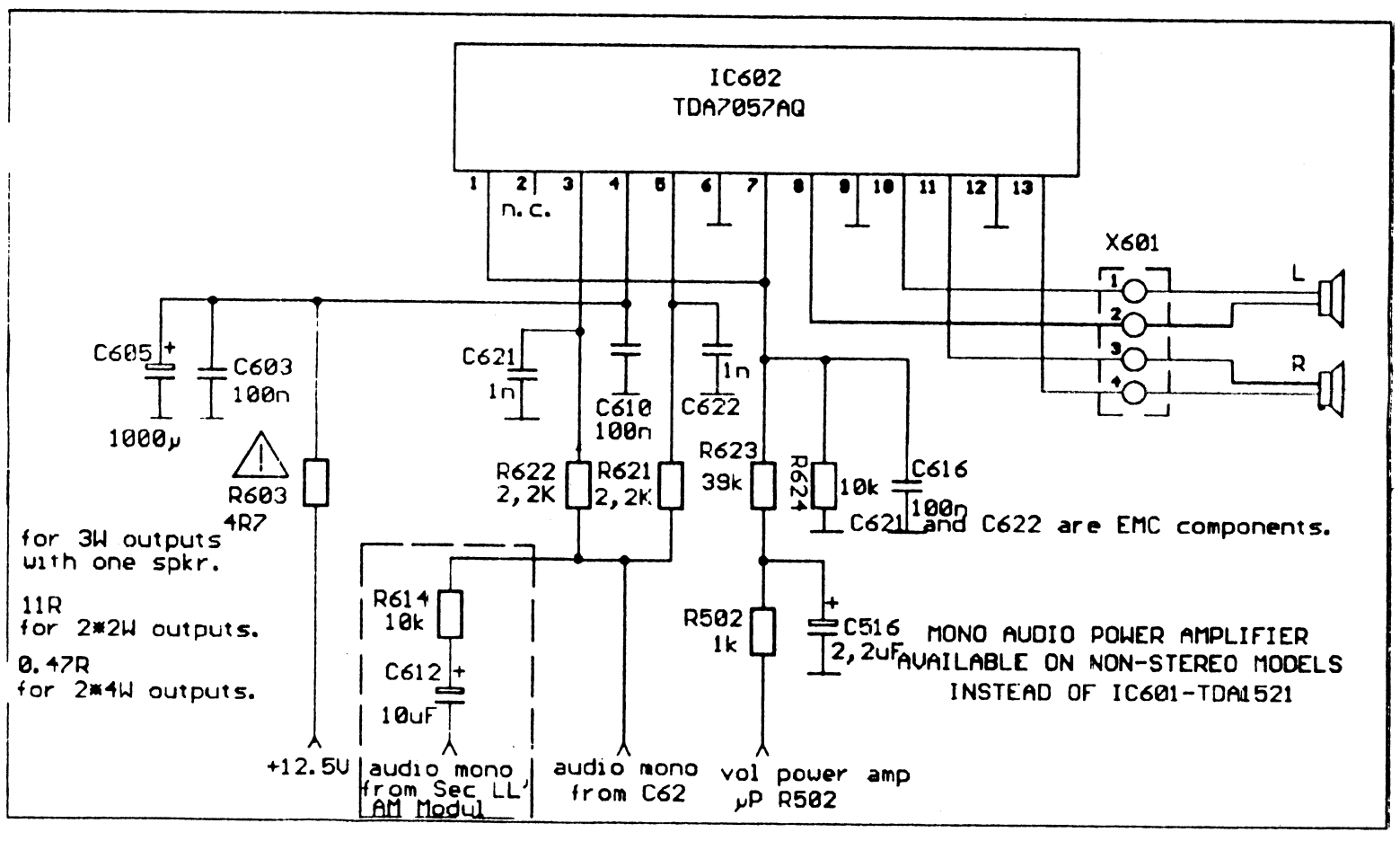


Subject to change without notice

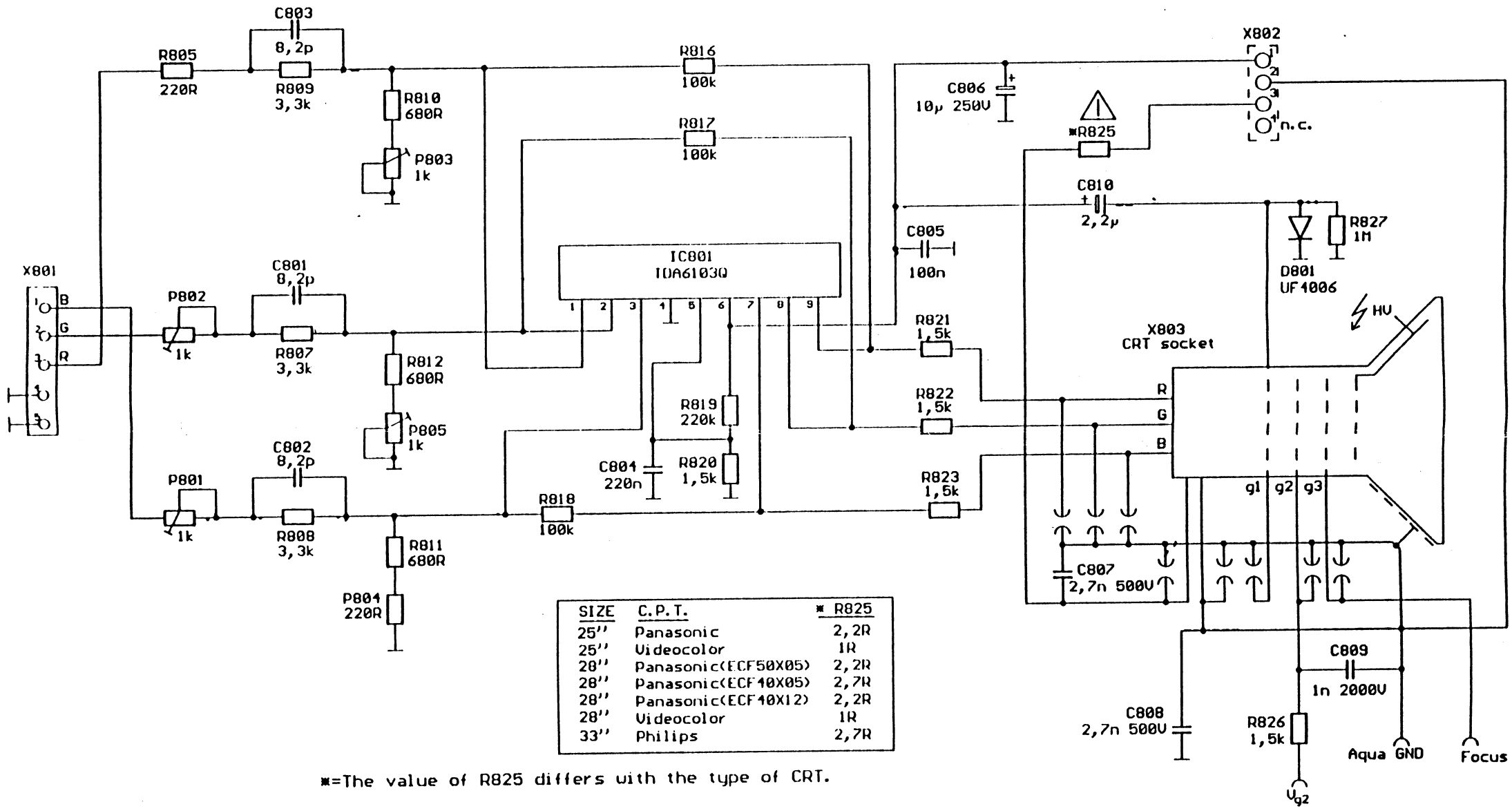
SECAM L'AM MODUL



MONO AF POWER MODUL



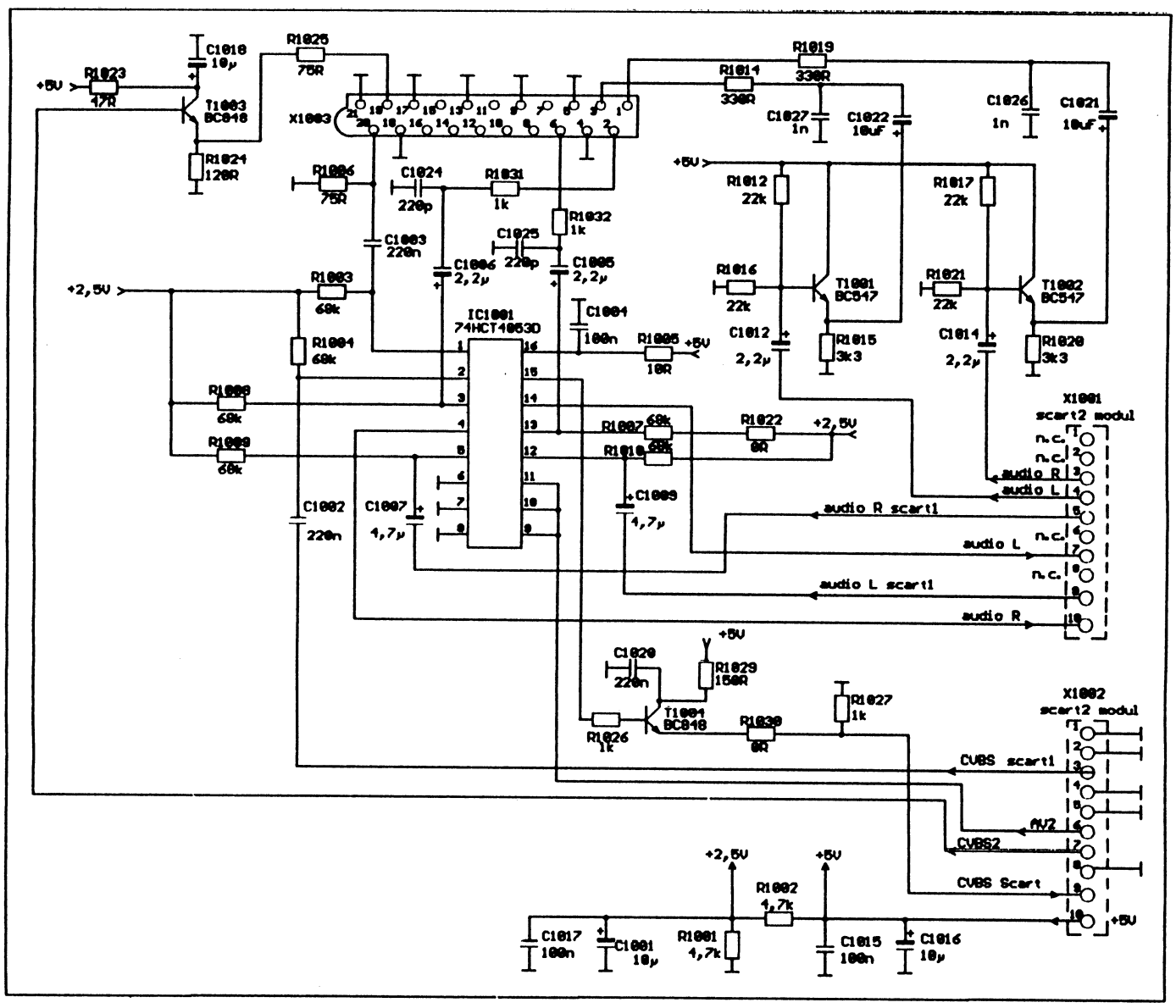
CRT MODUL



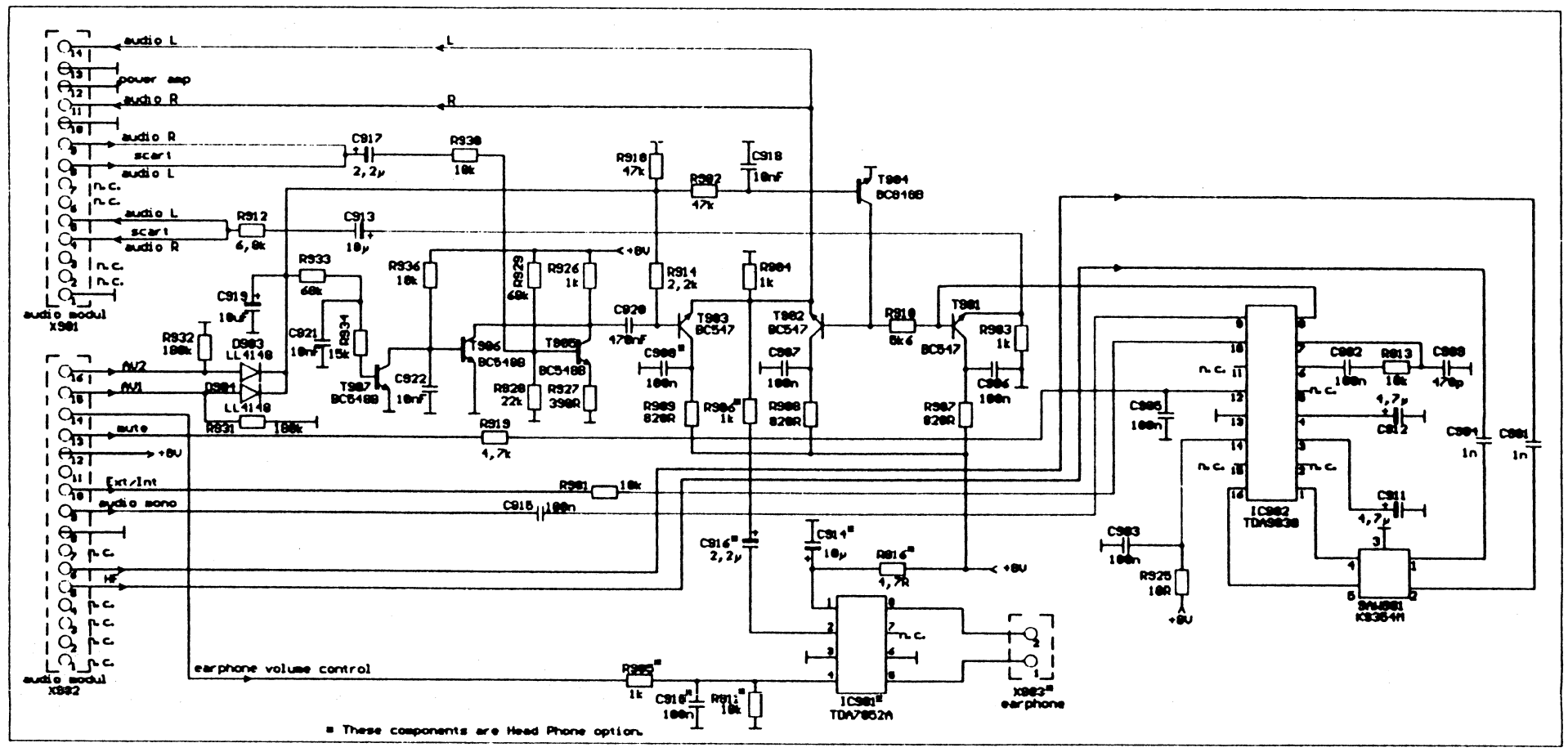
SIZE	C.P.T.	* R825
25''	Panasonic	2,2R
25''	Videocolor	1R
28''	Panasonic(ECF50X05)	2,2R
28''	Panasonic(ECF40X05)	2,7R
28''	Panasonic(ECF40X12)	2,2R
28''	Videocolor	1R
33''	Philips	2,7R

*=The value of R825 differs with the type of CRT.

DOUBLE SCART MODUL (OPTIONAL)

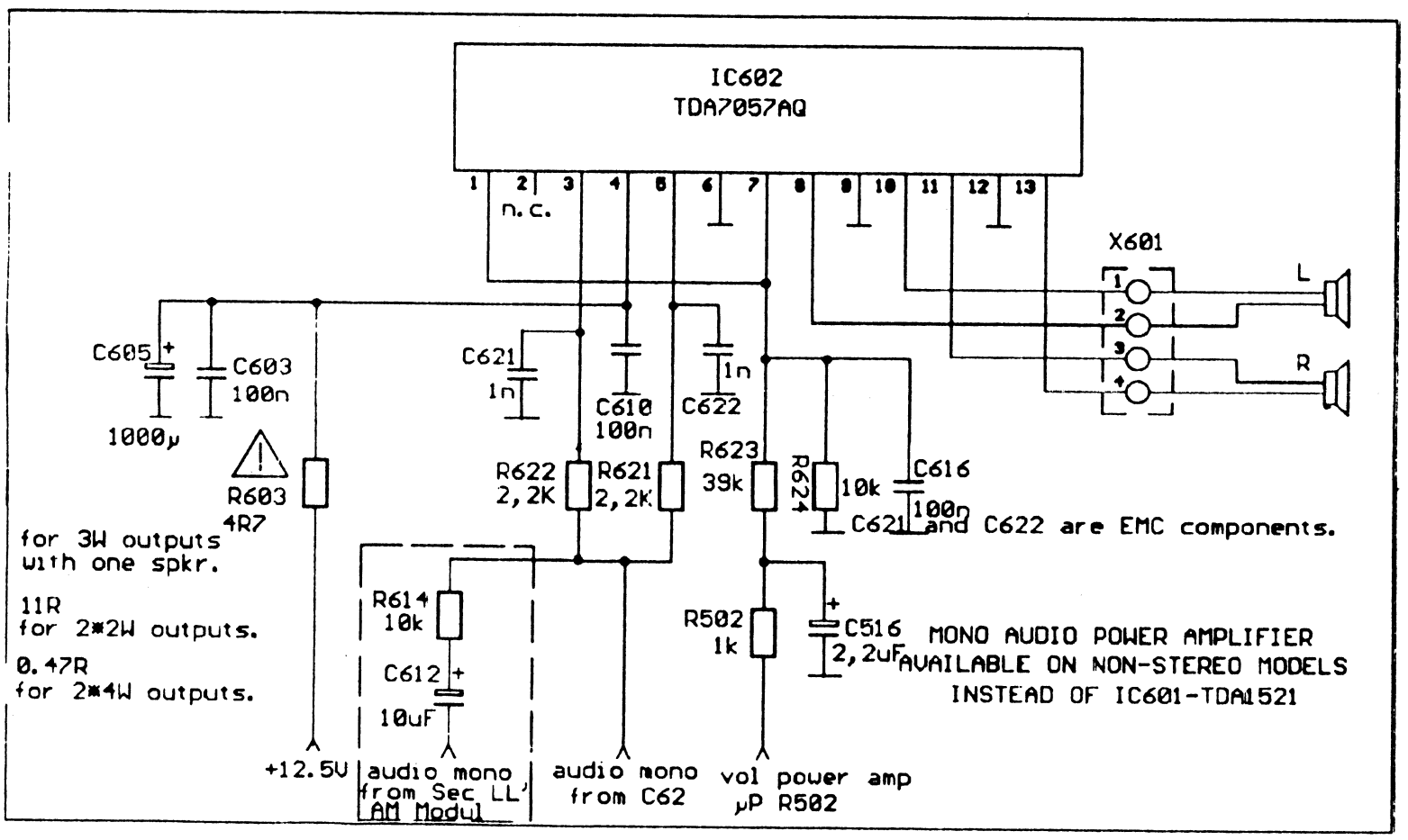


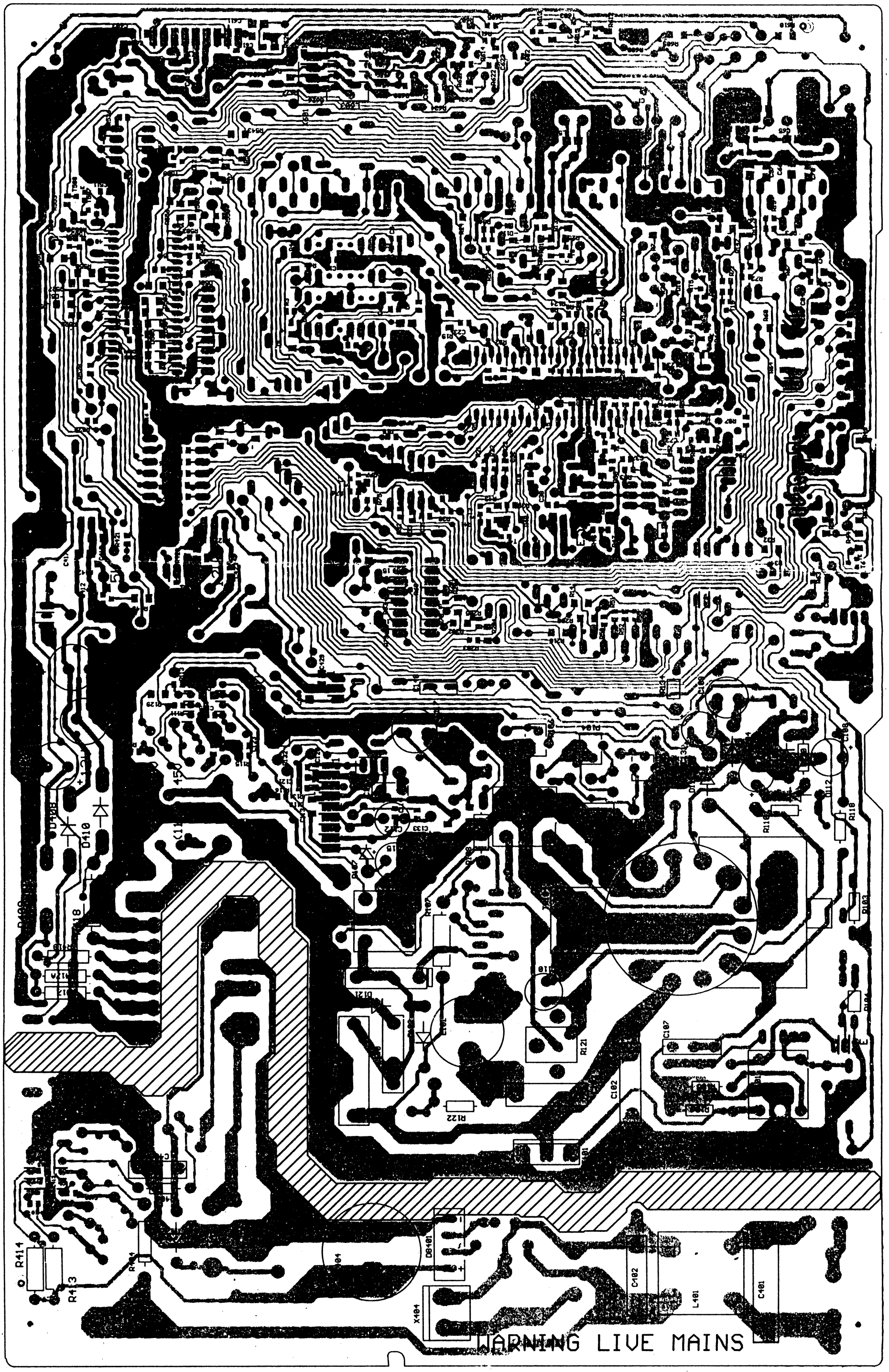
SECAM L'AM MODUL



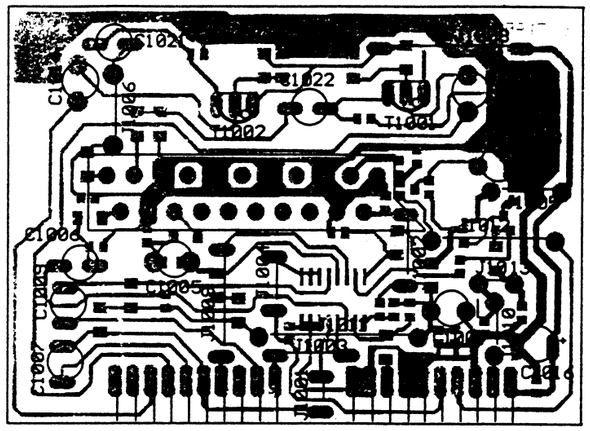
■ These components are Head Phone option.

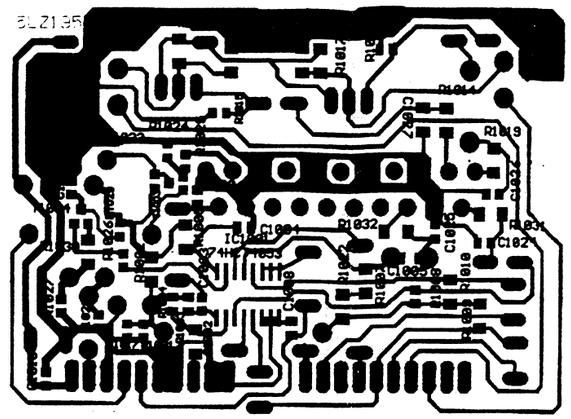
MONO AF POWER MODUL



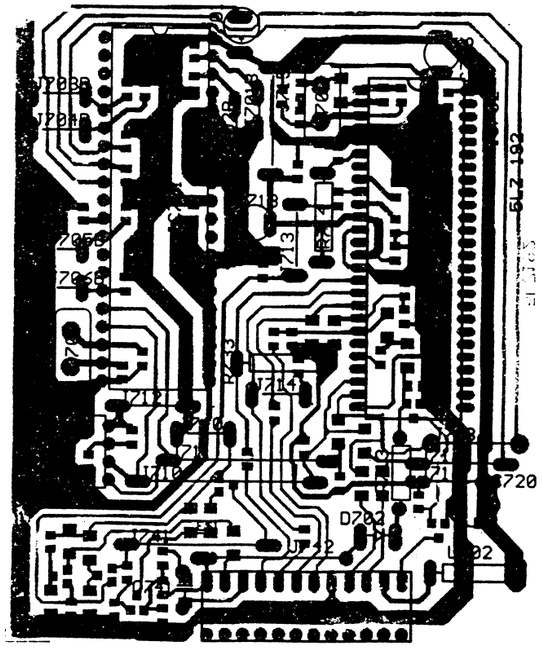

WARNING LIVE MAINS

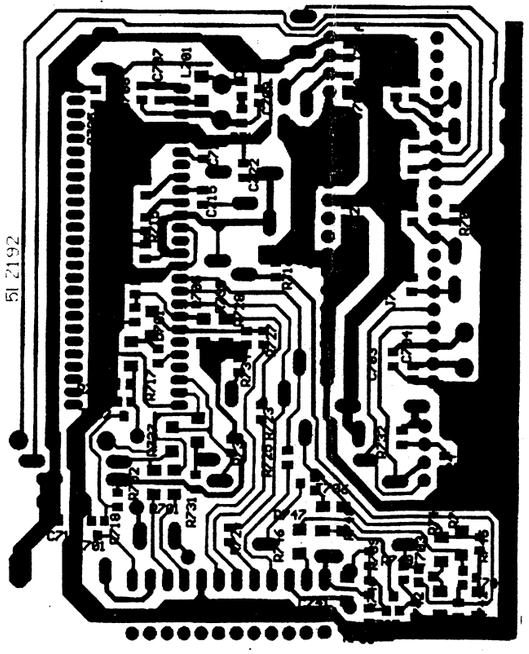
TELETEXT MODUL (OPTIONAL)





DOUBLE SCART MODUL (OPTIONAL)

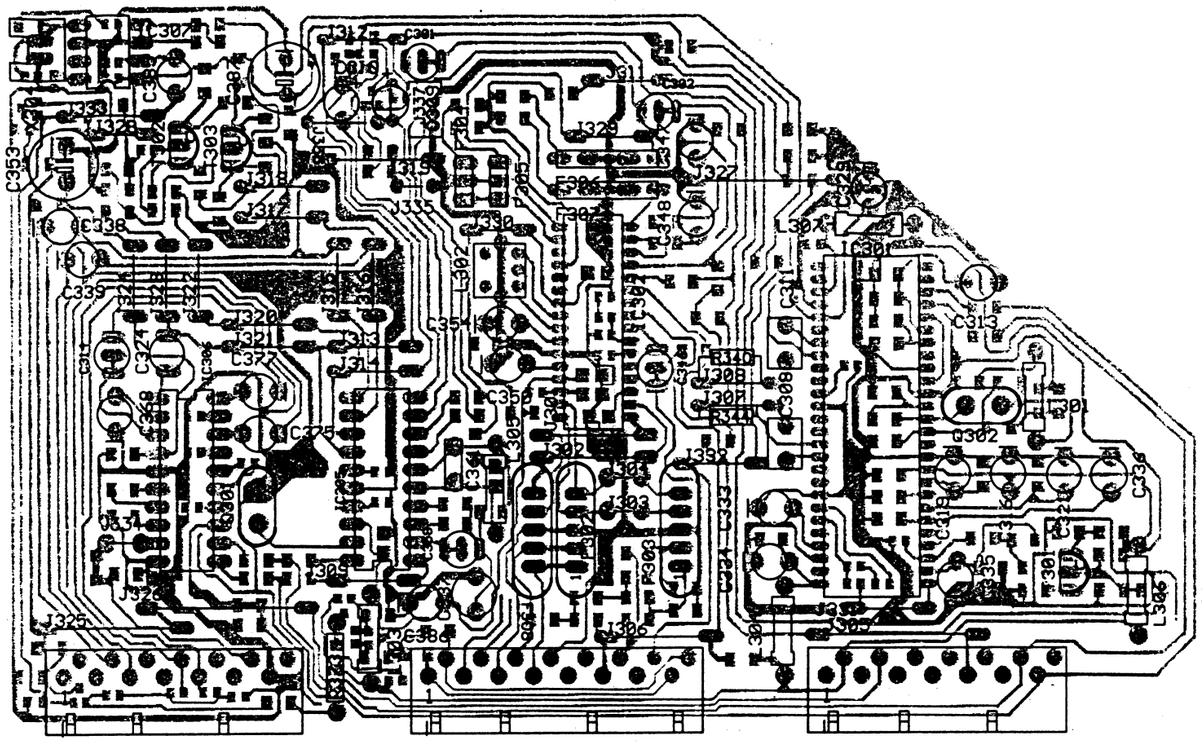


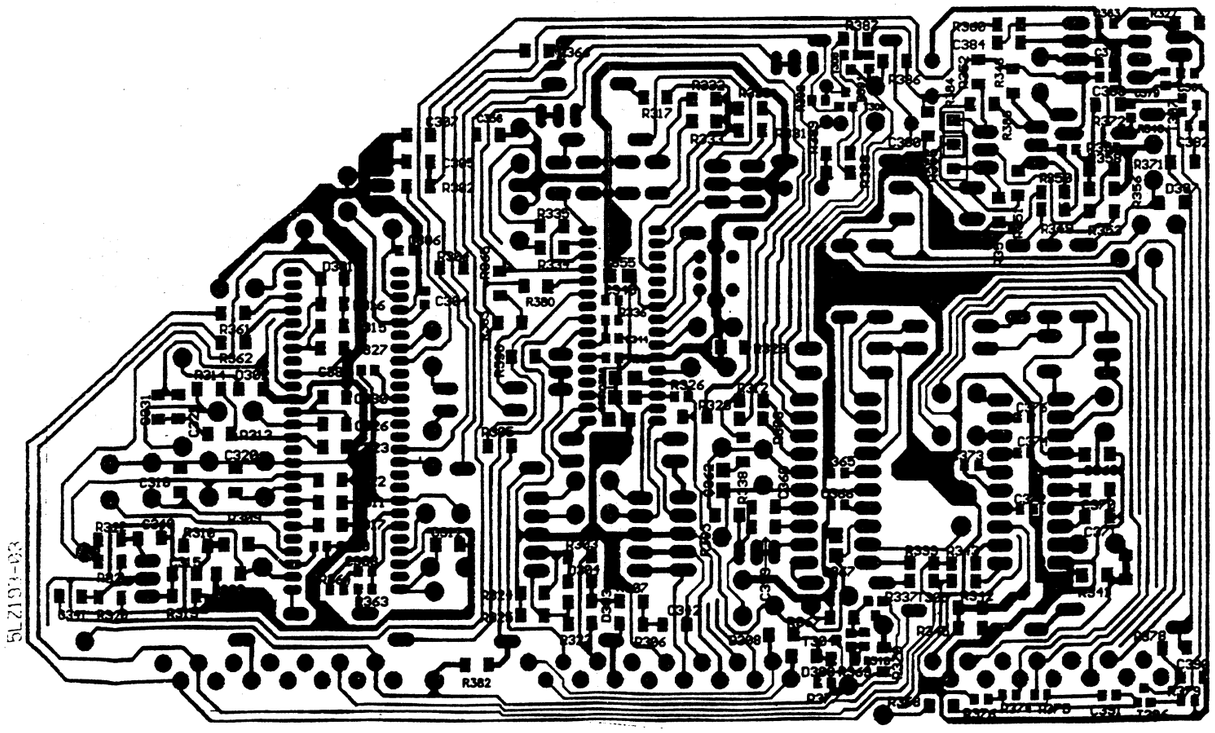


CR

CRT M

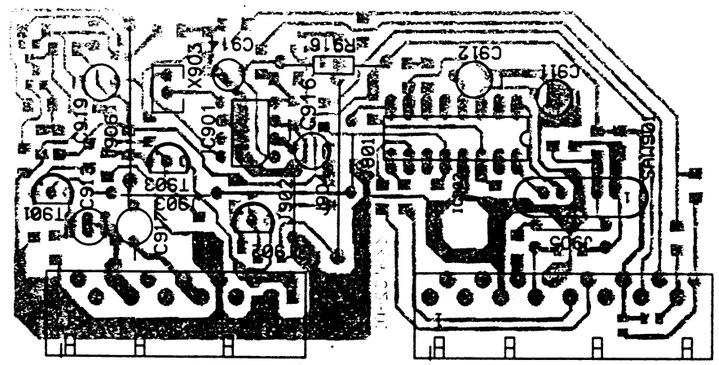
STEREO / NICAM MODUL (OPTIONAL)

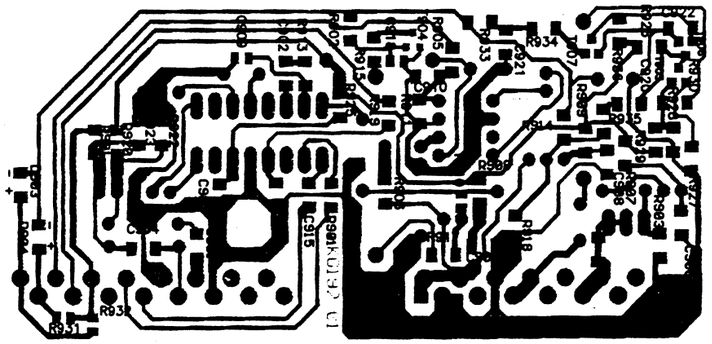




5L2191-03

SEC L' AM MODUL





Crown CTV 5616

TFK 3482
TECC2989PA1SE

TU1 TUNER

IC501
PCF8594C-2

IC502
PCA84C841

IC1
TDA8361
TDA8362

IC2
TDA8366

IC3
TDA1565

IC102 TDA3653B

IC601
TDA1521A

IC5
74HCT157

Options Stereo AF Power Amplifier

audio modul option

CRT MODUL

TELETEXT MODUL Option

Teletext related components on chassis

IC5, X2, T2, C43, C68
IR14, R46, R47, R48, R50,
R51, R52, R55, R134, R2B1,
R282, R283, R288, R218,
R510, R511, R512

EMC related components:
C51, C52, C56, C63, C68, C82,
C83, C84, C85, C104, C105,
C617, C618, C619, C620, C621,
C622, C623

EMC Components:

	MONO	STEREO
L12	18uH	18uH
L13	18uH	18uH
C69	-	1n
C97	-	1n

	MONO	STEREO
R64	0R	1k
R68	0R	1k

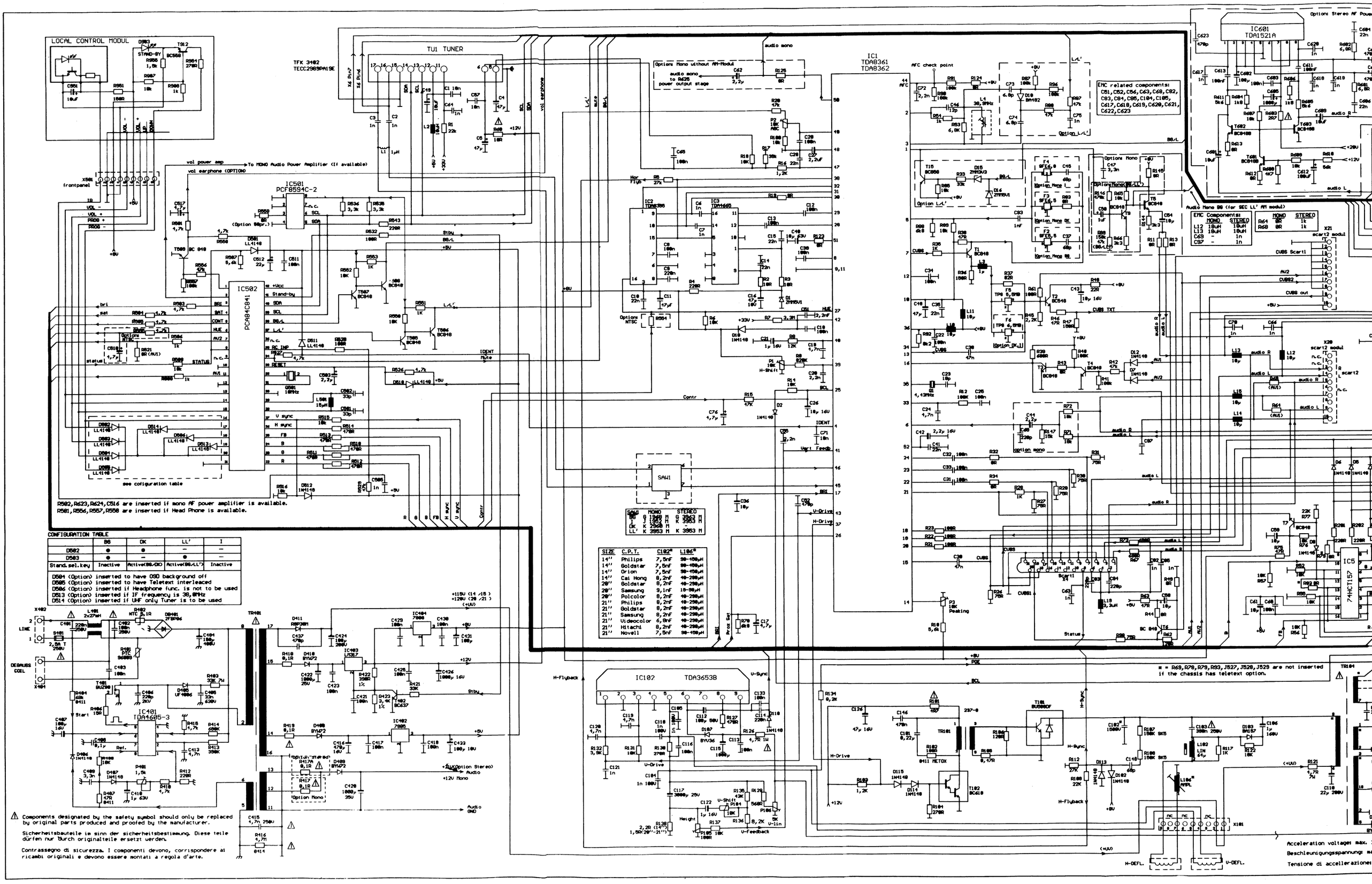
SAW	MONO	STEREO
BG	G 3960 M	G 3953 M
I	I 3952 M	K 3953 M
DK	K 2508 M	
LL'	K 3953 M	K 3953 M

SIZE	C.P.T.	C102*	L104*
14''	Philips	7,5nF	90-400µH
14''	Goldstar	7,5nF	90-400µH
14''	Orion	7,5nF	90-450µH
14''	Cai Hong	8,2nF	40-290µH
20''	Goldstar	8,2nF	40-290µH
20''	Samsung	9,1nF	15-90µH
20''	Polcolor	8,2nF	40-290µH
21''	Philips	8,2nF	40-290µH
21''	Goldstar	8,2nF	40-290µH
21''	Samsung	8,2nF	40-290µH
21''	Videocolor	6,8nF	40-290µH
21''	Hitachi	8,2nF	40-290µH
21''	Novell	7,5nF	90-400µH

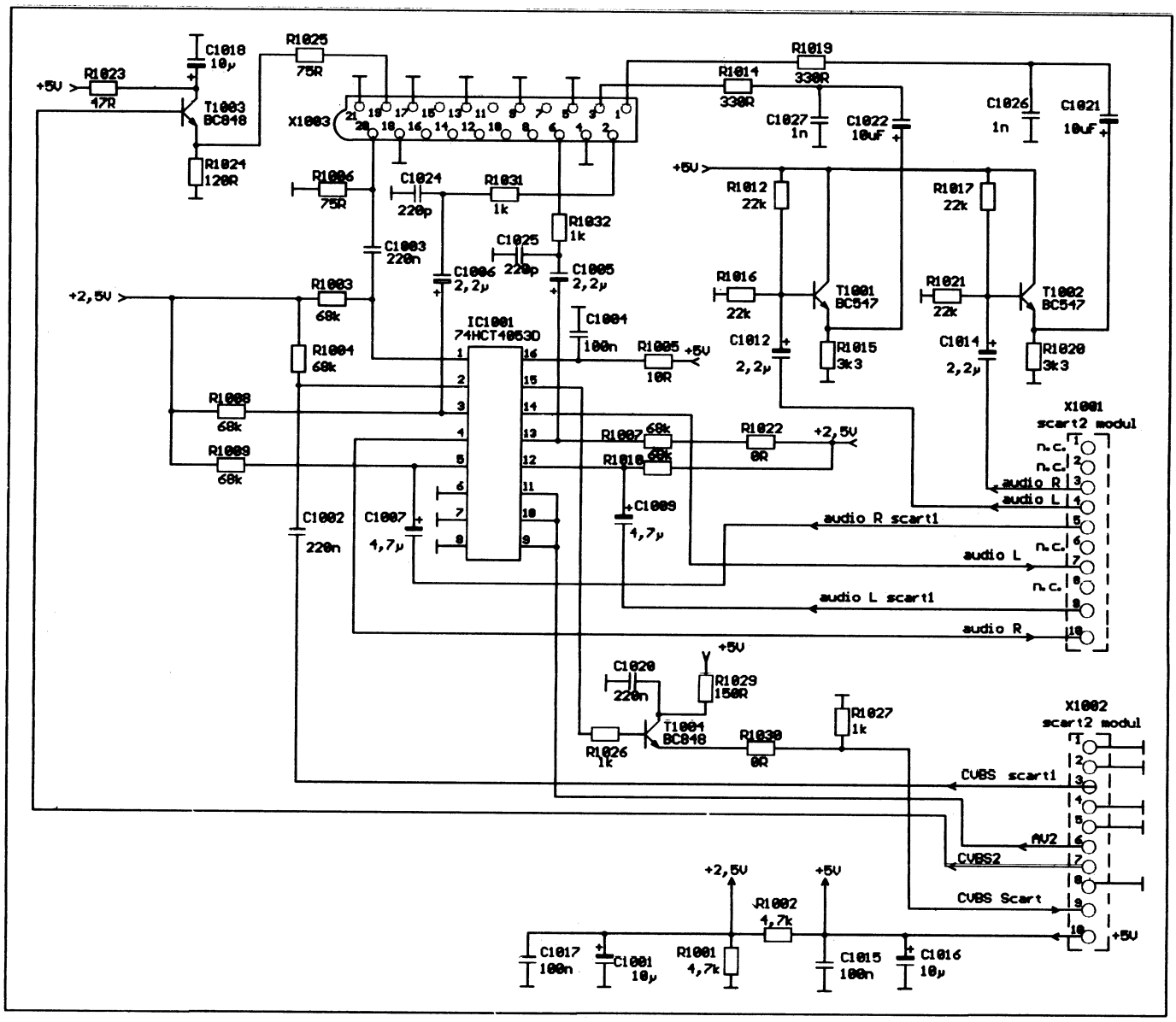
* = R69, R78, R79, R93, J527, J528, J529 are not inserted if the chassis has teletext option.

Acceleration voltage: max. 26,5kV.
Beschleunigungsspannung: max. 26,5kV.
Tensione di accellerazione: max. 26,5kV.

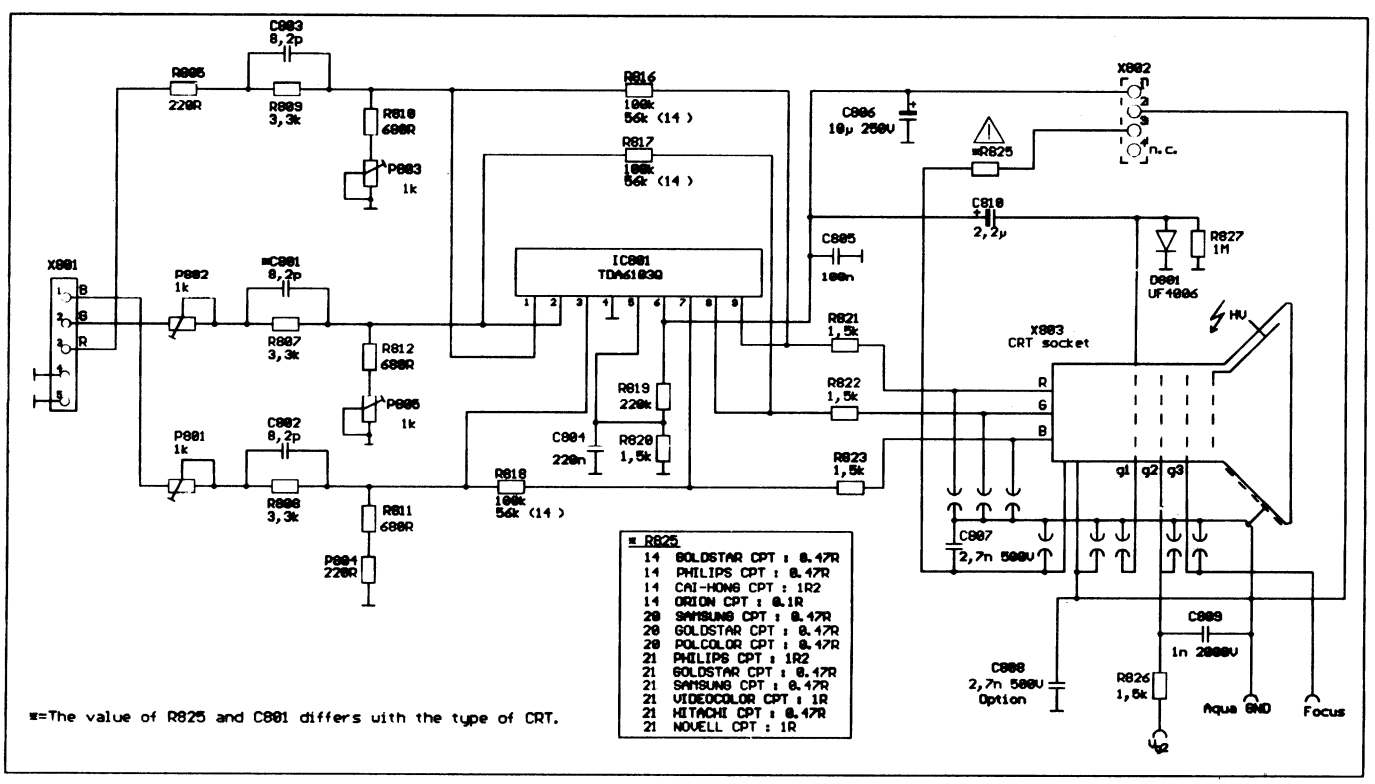
CTV CHASSIS 11.1 90°



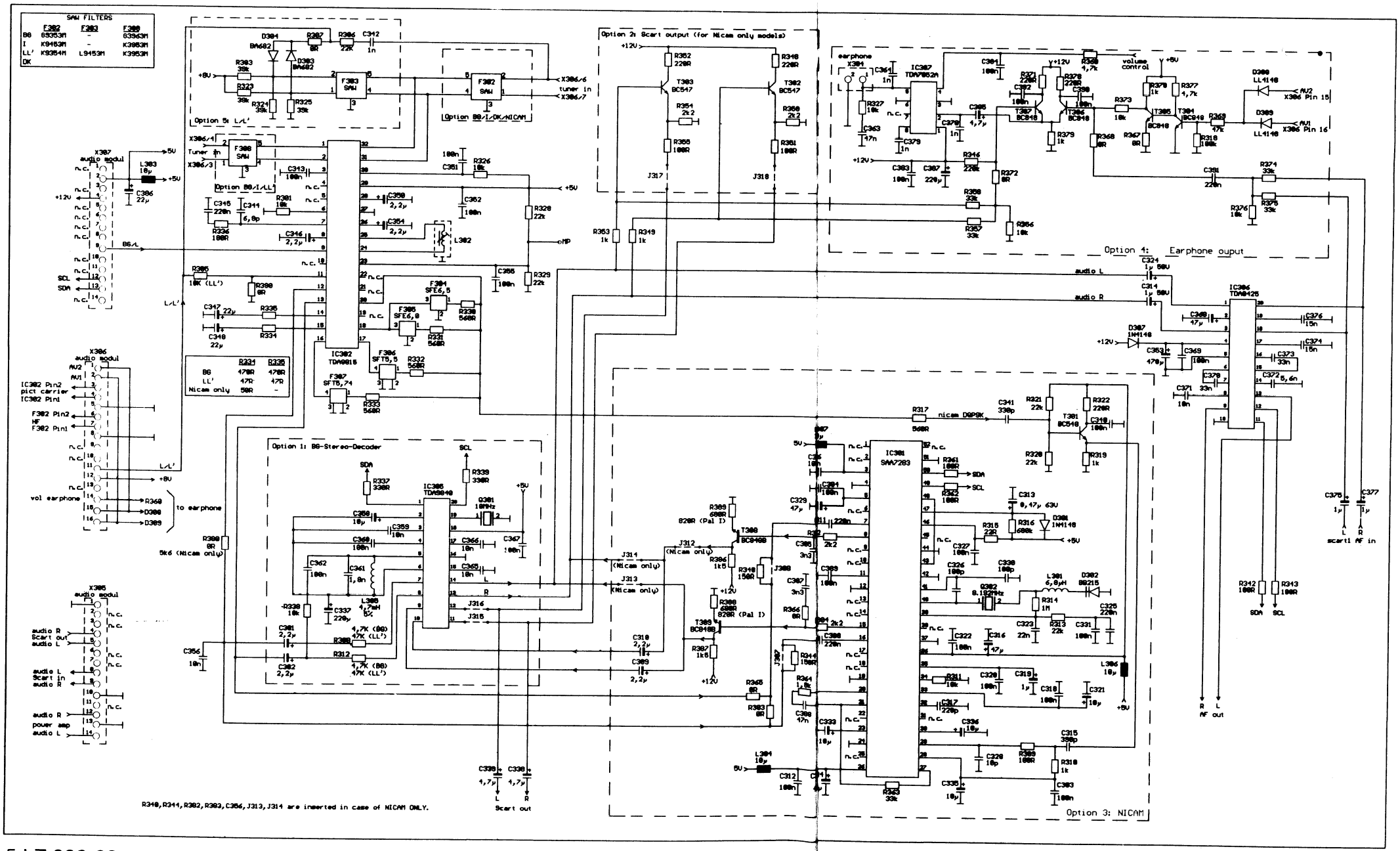
DOUBLE SCART MODUL (OPTIONAL)



CRT MODUL

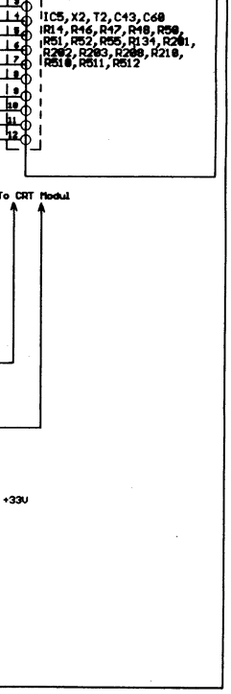


STEREO / NICAM MODUL (OPTIONAL)

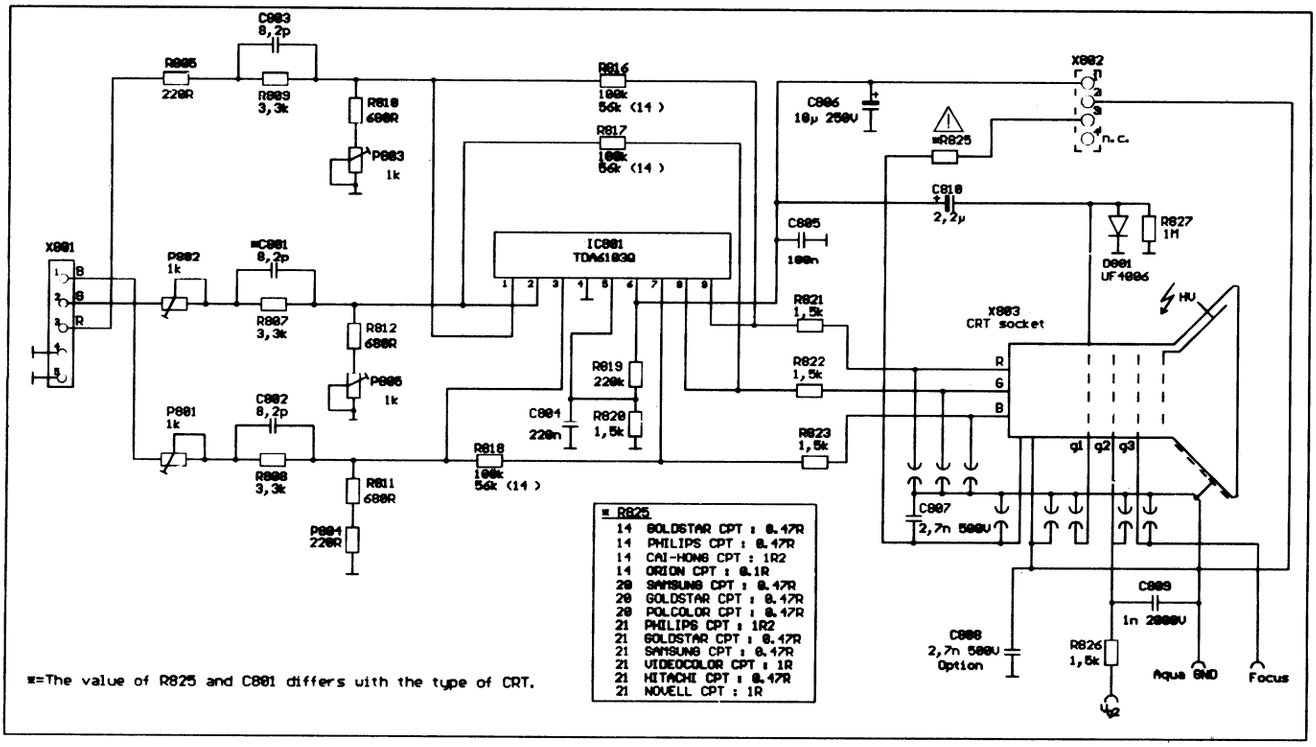


Bogazici

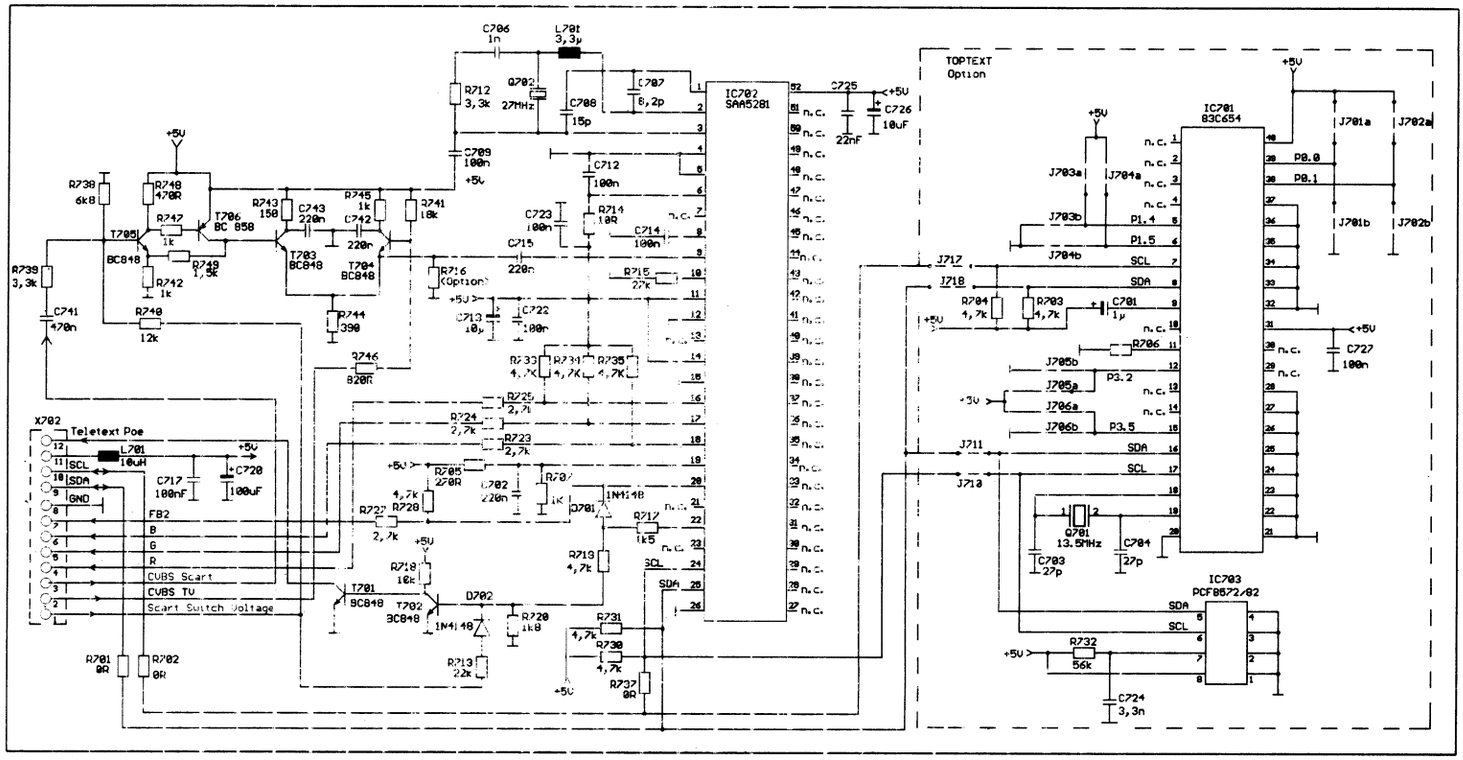
5 LZ 820-03



CRT MODUL



TELETEXT MODUL (OPTIONAL)

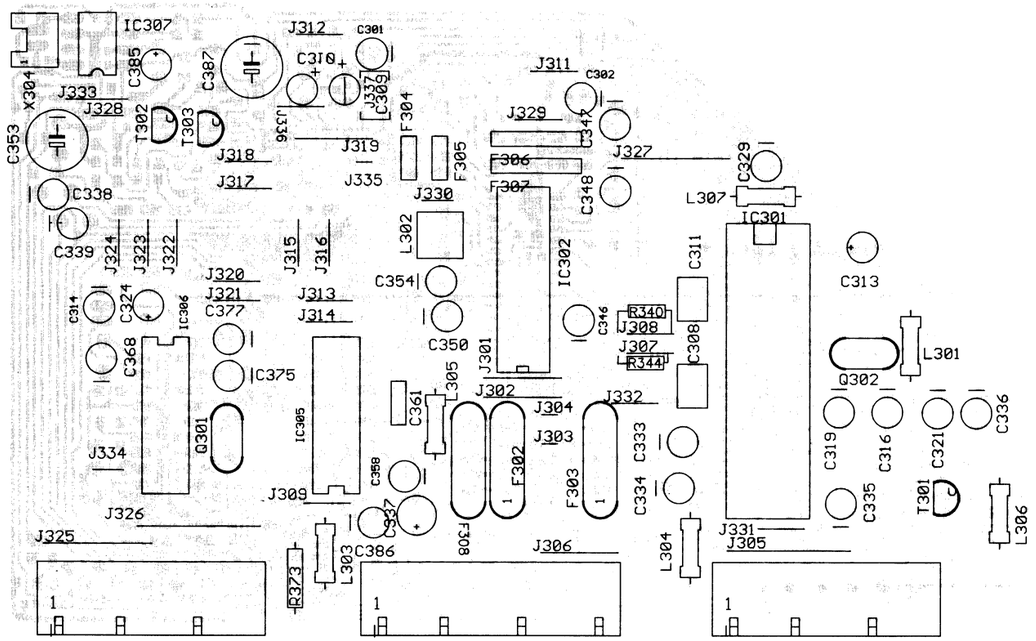


Subject to change without notice

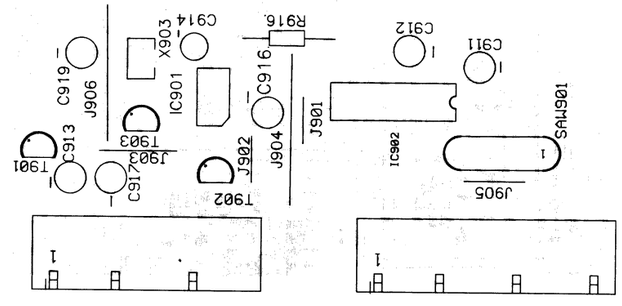
MAX.HIGH VOLTAGE : 26.5 29 kV.
MAX.BEAM CURRENT : 1.2 1.5 mA.
90° 110°
WARNING LIVE MAINS
T 2.5AH 250V
5LZ 190-26

MAIN CHASSIS

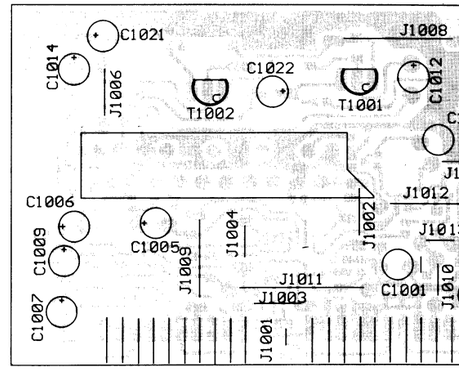
STEREO / NICAM MODUL (OPTIONAL)

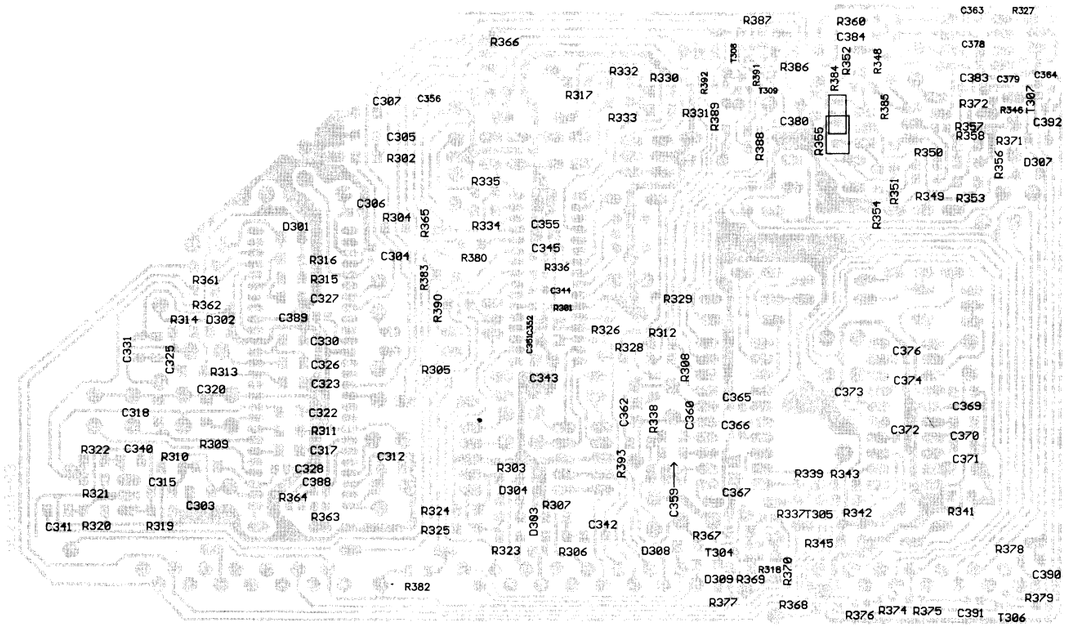


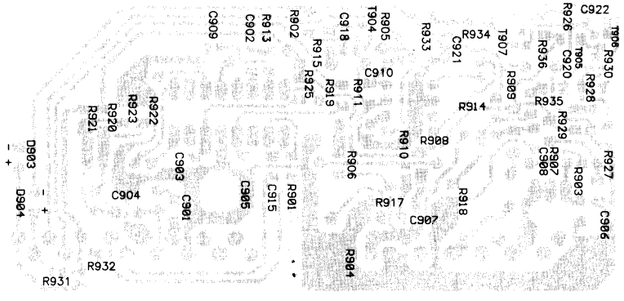
SEC L'AM MODUL



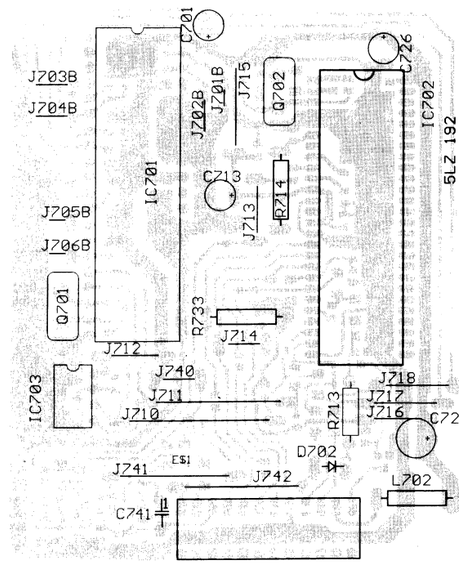
TELETEX



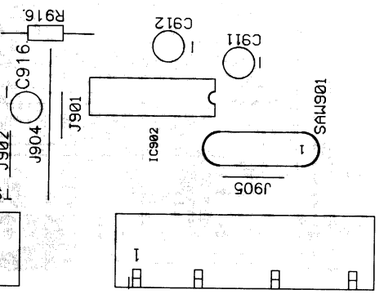




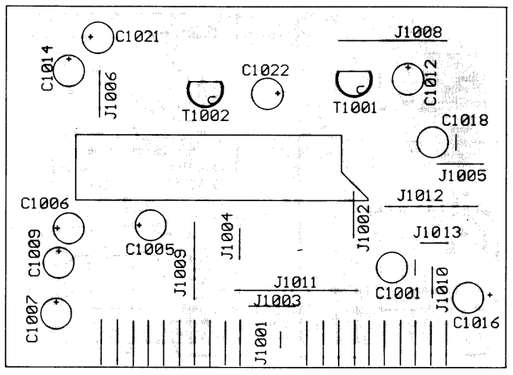
DOUBLE SC

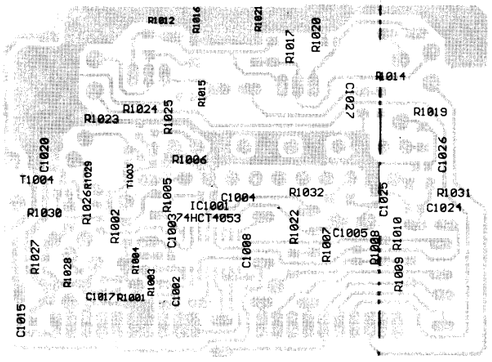


AM MODUL

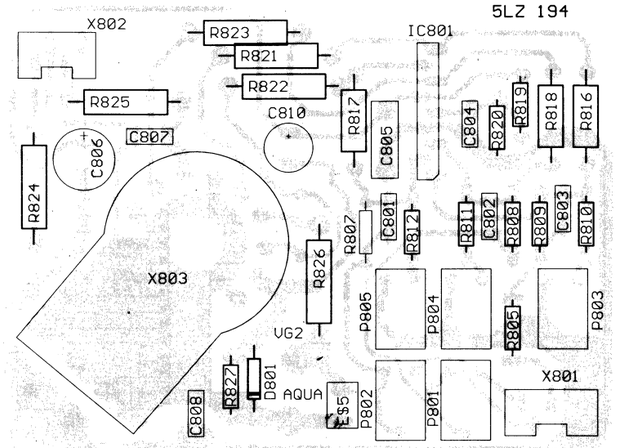


TELETEXT MODUL (OPTIONAL)

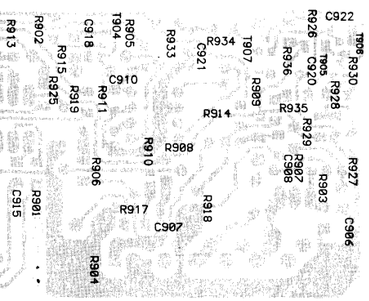


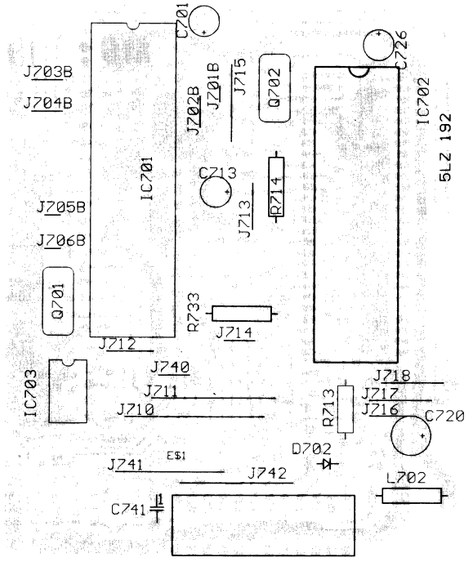


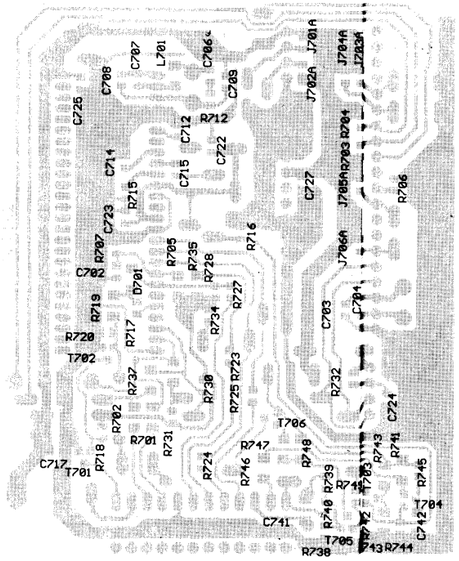
CRT MODUL (NARROW NECK)



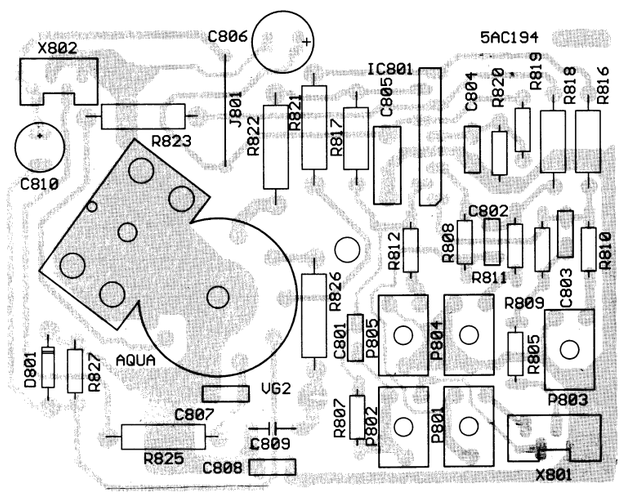
DOUBLE SCART MODUL (OPTIONAL)







CRT MODUL (MINI NECK)



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Operation Instructions	4
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PCF8598C-2 1024 x 8-bit CMOS EEPROMs with I^2C-bus inferce	15
SAA 5297 Teletext and TV microcontroller	16
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Convergence Adjustments	24
Electronic Part List	25

SAFETY INSTRUCTIONS

SAFETY - PRECAUTIONS
WARNING: The following precautions should be observed.

1. Although the chassis is isolated from the mains supply, some areas of the main PCB are at mains potential. An isolation transformer (250-500 VA) should therefore be connected between the mains and the receiver before service is attempted.

2. Do not install, remove, or handle the picture tube in any manner unless safety goggles are worn. People not equipped should be kept away while picture tubes are handled. Keep the picture tube away from the body while handling.

3. When replacing the chassis in the cabinet, ensure all the protective devices are put back in place, such as: barriers, non-metallic knobs, cable ties, adjustments and compartment cover or shields, isolation resistor-capacitor, etc.

4. When service is required note the original lead locations and anchor points. Ensure all leads, especially in areas of high voltage, are routed/anchored in their correct locations when reassembling the receiver.

5. Always use the manufacturer's replacement safety component. Always replace original spacers and maintain lead lengths. Critical safety components should not be replaced by other makes. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.

6. Before returning a serviced receiver to the customer, the service technician must throughly test the unit to be certain that it is completely safe to operate without danger of electric shock, and be sure that no protective device built into the instrument by the manufacturer has become defective, or inadvertently damaged during servicing. Therefore, the following checks are recommended for the continued protection of customers and service technicians.

INSULATION
Insulation resistance should not be less than 10M at 500V DC between the mains poles and any accessible metal parts.
Also, no flashover or breakdown should occur during the dielectric strength test applying 3kV AC or 4.25kV DC for two seconds between the mains poles and accessible metal parts.

HIGH VOLTAGE
High voltage should always be kept at rated value of the chassis and not higher. Operating at higher voltage may cause a failure of the picture tube or high voltage supply and also, under certain circumstances could produce x-ray radiation moderately in excess of design levels. The high voltage must not, under any circumstances exceed 28.5kV on the chassis.

X-RAY RADIATION
TUBES: The primary source of x-ray radiation in this receiver is the picture tube. The tube utilised for the above mentioned function in this chassis is specially constructed to limit x–ray radiation. For continued x-ray radiation protection, replace tube with the same type as the original BEKO approved type.

PRODUCT SAFETY NOTICE
Many electrical and mechanical parts in BEKO television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by marking with a ⚠ on the schematics and replacement parts list in this Service Manual.
The use of substitute replacement components which do not have the same safety characteristics as BEKO recommended parts, may create electric shock, fire, Xray radiation, or other hazards.

TUBE DISCHARGE
The line output stage can develop voltages in excess of 25kV; if removal of the EHT cap is required then, discharge the anode cap to chassis via a high value resistor, prior to its removal from the tube.

TECHNICAL SPECIFICATIONS 11.2 CHASSIS

1. OPERATING CONDITIONS

POWER SUPPLY	140 TO 270 VAC
NOMINAL OPERATING VOLTAGE	230 VAC
FREQUENCY	50 Hz
TEMPERATURE RANGE	0 TO 45 DEGREES C
HUMIDITY RANGE	YEAR'S MEAN = 75%
	MAX= 95%

2. RF SECTION

2.1 RECEIVING CHANNELS FOR VHF/UHF BAND

	CCIR B/G	UK I
VHF BAND		
BAND I		CHANNEL2-5
BAND III	CHANNEL 5-12	CHANNEL 6-12
CABLE	S1-S19,S20-S41	S1-S19,S20-S41
UHF BAND		
BAND IV-V	CHANNEL 21-69	CHANNEL 21-69

	MIN		UNIT
GAIN LIMITED SENSITIVITY			
INPUT SIGNAL LEVEL FOR			
STANDARD VIDEO OUTPUT VOLTAGE			
BAND 1/3	–	–	dB μV
BAND 4/5	–	–	dB μV
NOISE LIMITED SENSITIVITY			
INPUT SIGNAL LEVEL FOR 30 dB			
(S+N)/N-RATIO, WEIGHTED, CCIR			
REC 567			
BAND 1/3/4/5 :	–	–	dB (μV)
SELECTIVITY HF+IF			
IF FREQUENCIES	:		
	I		
Picture Carrier B/G	38.,9		
Sound Carrier 38.9	32,9		
Colour Carrier 33.4	34,47		
34,47			
VOLTAGE STANDING WAVE RATIO :	MIN		UNIT
BAND 1/3 :	–		–
BAND 4/ 5 :	–		–
MAXIMUM INPUT SIGNAL LEVEL :			
BAND 1/3 :	100 dB μV (MAX)		
BAND 4/ :	100 dB μV (MAX)		

3. VIDEO OUTPUT SECTION

	MIN		NOM	MAX	UNIT
VIDEO OUTPUT VOLTAGE :					
(measured on cathode with					
lowest output level, contrast					
control and drive control at max :	90	100	–	V	
FREQUENCY RESPONSE :					
INPUT AERIAL STANDARD, HF SIGNAL :					
STANDARD B/G - D/K-I-L :	–10		–7	–	dB
INPUT: SCART PIN 20					

4. CHROMA SECTION

		MIN	NOM	MAX	UNIT
PAL/SECAM COLOUR CAPTURE RANGE	:	+300/-500	±700	–	HZ
PHASE ERROR OF REFERENCE CARRIER	:	–	+–5	10	DEGRESS
COLOUR KILLER	:	30			dB μV (NOMINAL)

5. SOUND SECTION

		MIN	NOM	MAX	UNIT
SCART OUTPUT S/N RATIO	:	40	45	–	dB

POWER OUTPUT (at 10% distortion) fm= 1KHz		R	L	C	S	
	: 28"	10	10	10	5	(Rms) Watts
	: 33"	12	12	12	6	

6. SYNCHRONISATION

LINE FREQUENCY LOCKING RANGE	:	±300 HZ
VERTICAL FREQUENCY LOCKING RANGE	:	±5 HZ

7. PICTURE TUBE DRIVE SECTION

	28"	33"
EHT	: 25.0±0.5KV	: 28.5±0.5KV
FOCUS VOLTAGE	: MIN 25.6% : MAX 38%	: MIN 25.6% : MAX 38%
GRID 2 VOLTAGE RANGE	: MIN 300V, MAX 1350 V	: MIN 300V, MAX 1350 V
HEATER VOLTAGE	: 6.2±0.2 Vms	: 6.2±0.2 Vms

Power Supply Voltages

B+SUPPLY VOLTAGE (AT Ib=0)	28" / 33"	145V±1V

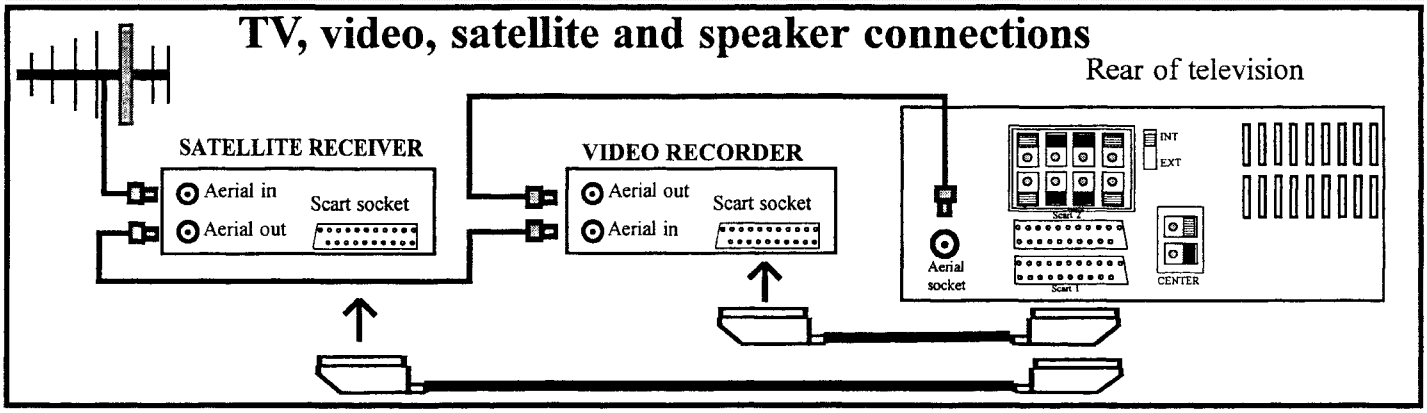
20V OUTPUT Audio Stereo	: 20.0 ±0.5 VDC
12V OUTPUT	: 12 ±0.5 VDC
8V OUTPUT	: 8.0±0.5VDC
5V OUTPUT	: 5.0±0.5VDC

8. OTHERS

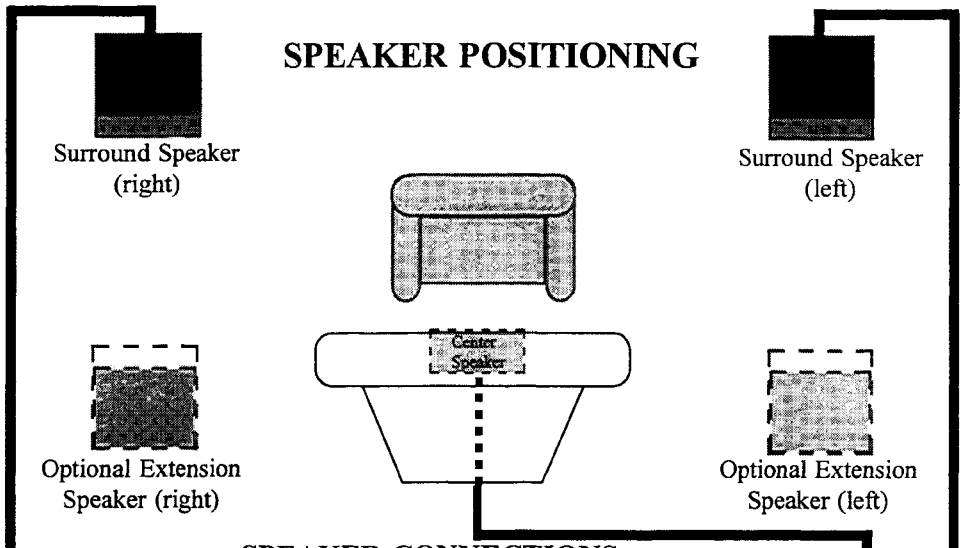
AMBIENT OPERATING TEMPERATURE	:	0-45 DEGREES C
STORAGE TEMPERATURE	:	-10 TO + 85 DEGREES C
POWER CONSUMPTION	28" :	135 Watts (max)
	33" :	145 Watts (max)

SAFETY	:	IEC 65 /BS P2N
X-RAY RADIATION	:	ACC. IEC 65 /BS P2N
Picture Tube Dimensions/Visible Screen Size	:	28" (70 cm/66 cm) 33" (80 cm/84 cm)

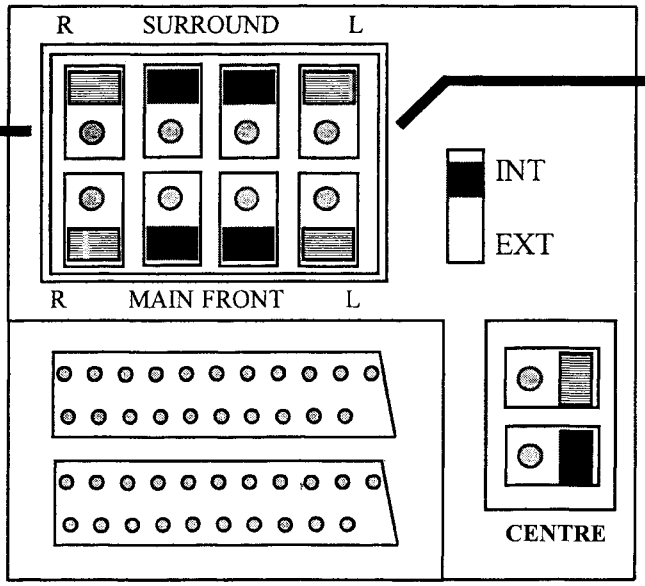
TV, video, satellite and speaker connections



SPEAKER POSITIONING



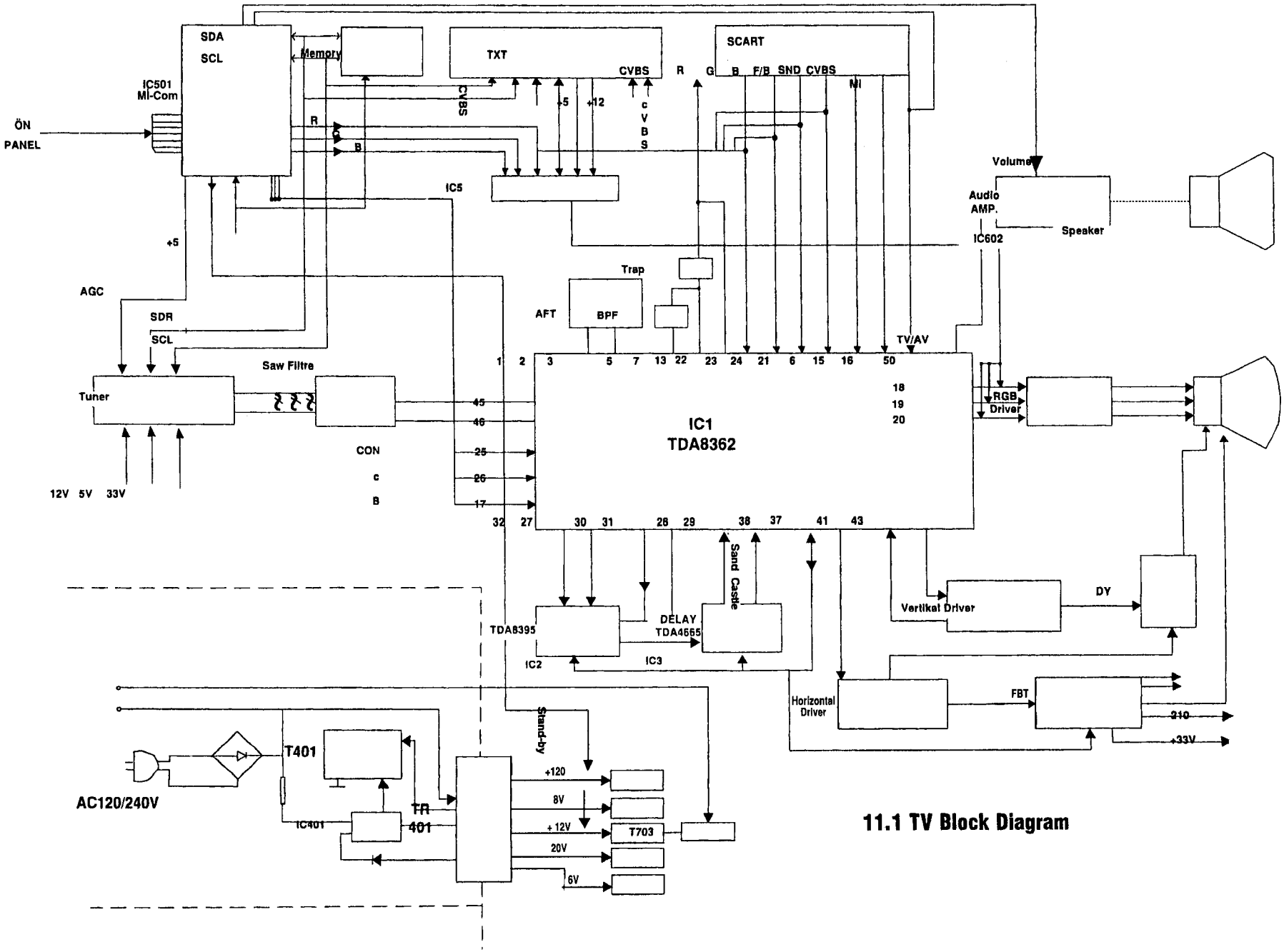
SPEAKER CONNECTIONS (Panel located on rear of TV)



Note: The wire with the black trace must be connected to the negative (black) terminal.

Centre and Surround Speakers

These speakers are essential to get Surround effects from your TV. The centre speaker is detachable from the stand if required, and should be placed below the TV screen. The rear speakers should ideally be placed above and behind the normal seating area as shown. The optimum mounting height being approx. 1metre above seated head height. Alternatively these speakers can stand on the floor.

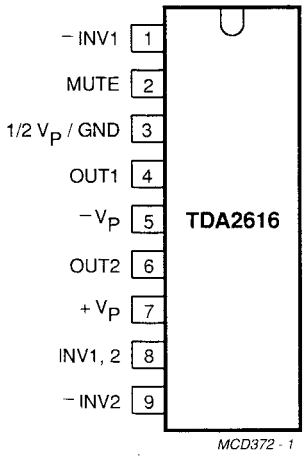


11.1 TV Block Diagram

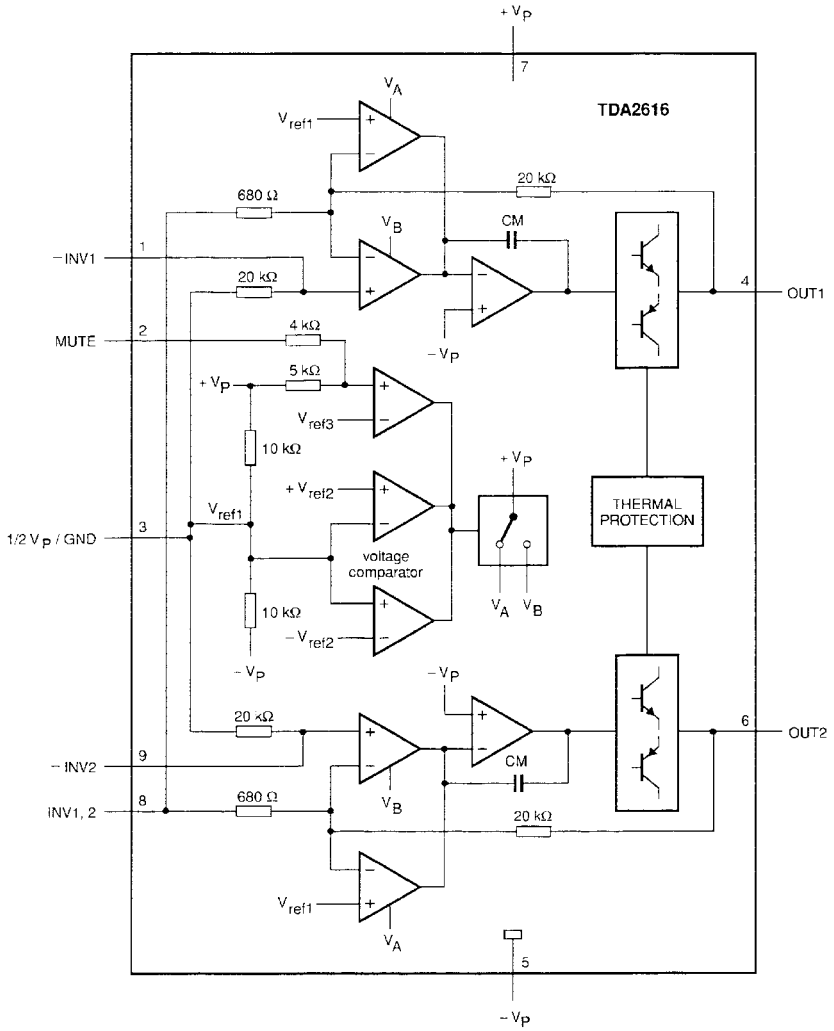
2 x 12 W hi-fi audio power amplifier with mute

GENERAL DESCRIPTION

The TDA2616 is dual power amplifier and is supplied in a 9-lead single-in-line (SIL9) plastic power package. It has been especially designed for mains fed applications, such as stereo radio and stereo TV.



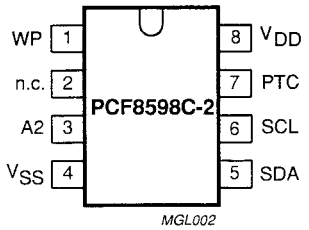
TDA 2616 - BLOCK DIAGRAM



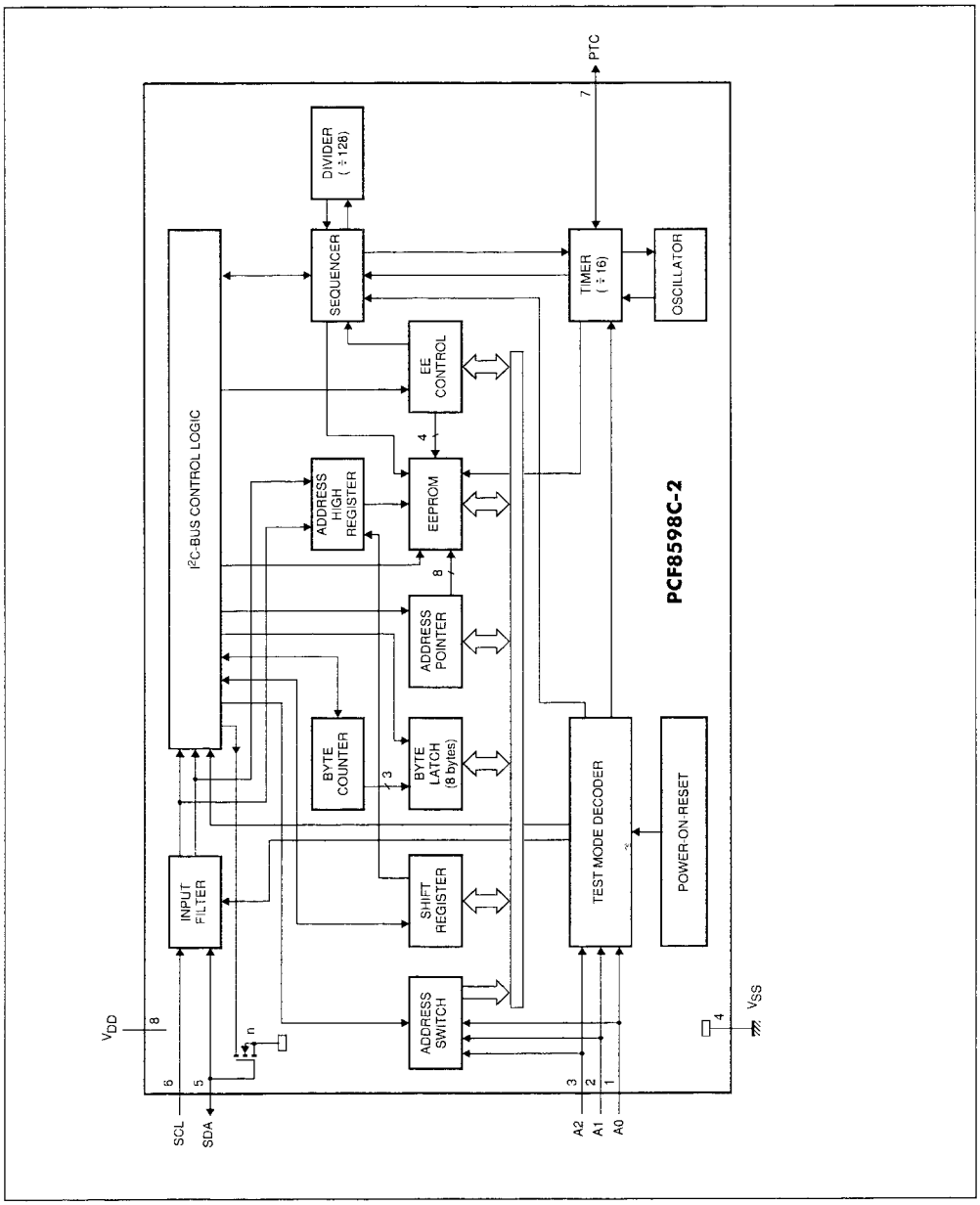
256 to 1024 × 8-bit CMOS EEPROMs with I²C-bus interface

GENERAL DESCRIPTION

The PCF8598C-2 is a floating gate Electrically Erasable Programmable Read Only Memory (EEPROMs) with 8 kbits(1 024 × 8-bit).
By using an internal redundant storage code it is fault tolerant to single bit errors. This feature dramatically increases the reliability compared to conventional EEPROMs. Power consumption is low due to the full CMOS technology used. The programming voltage is generated on-chip, using a voltage multiplier.



BLOCK DIAGRAM



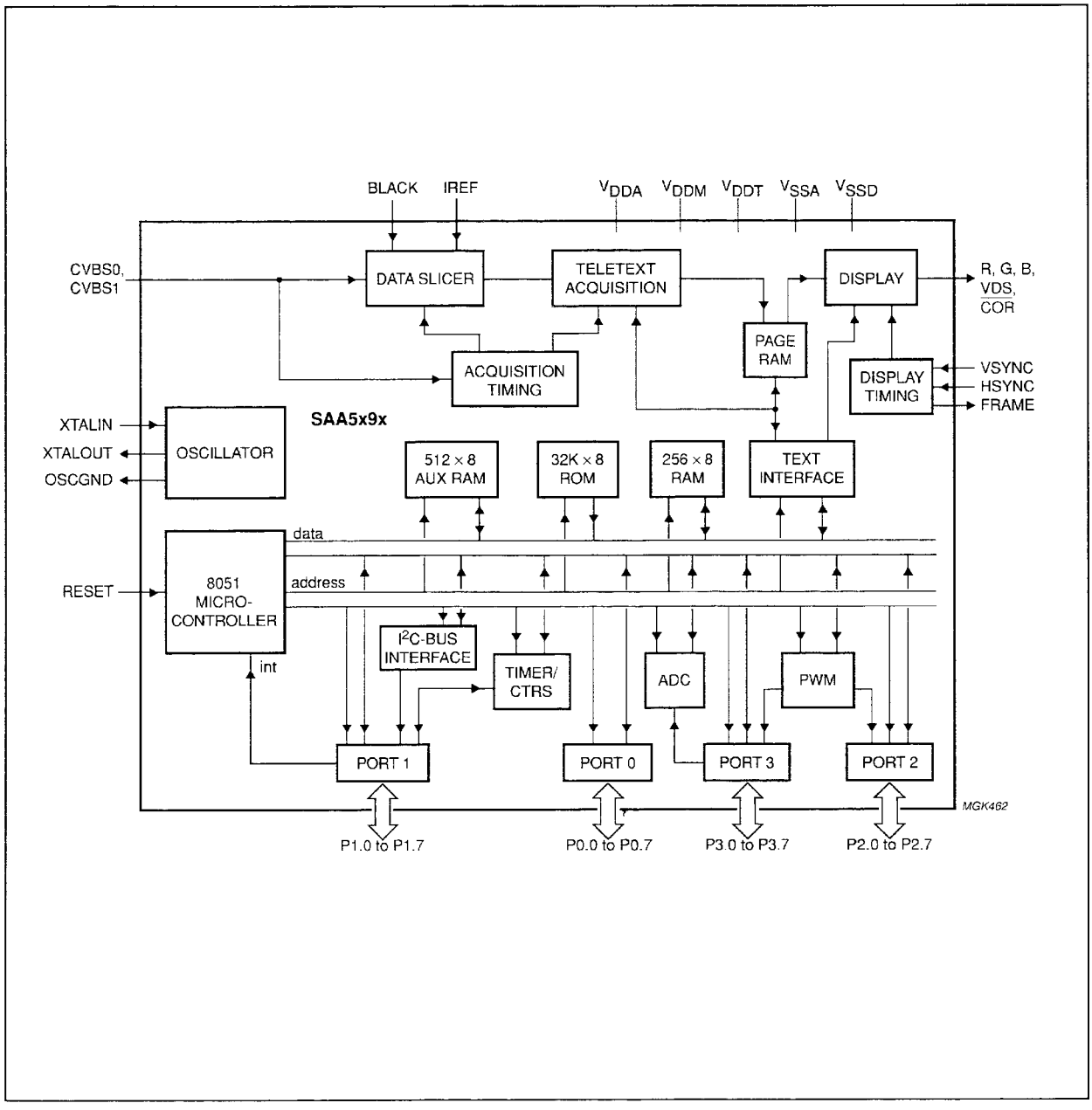
1 FEATURES

1.1 General

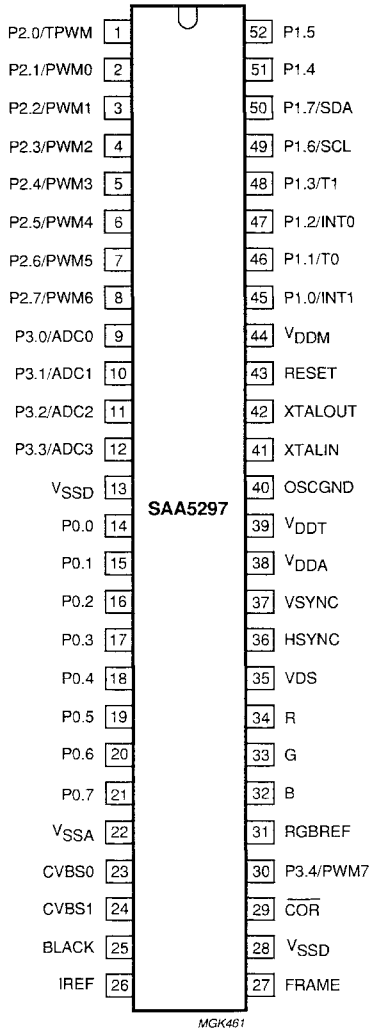
- Single chip microcontroller with integrated teletext decoder
- Single +5 V power supply
- Single crystal oscillator for teletext decoder, display and microcontroller.

SAA 5297

BLOCK DIAGRAM



Pin configuration:



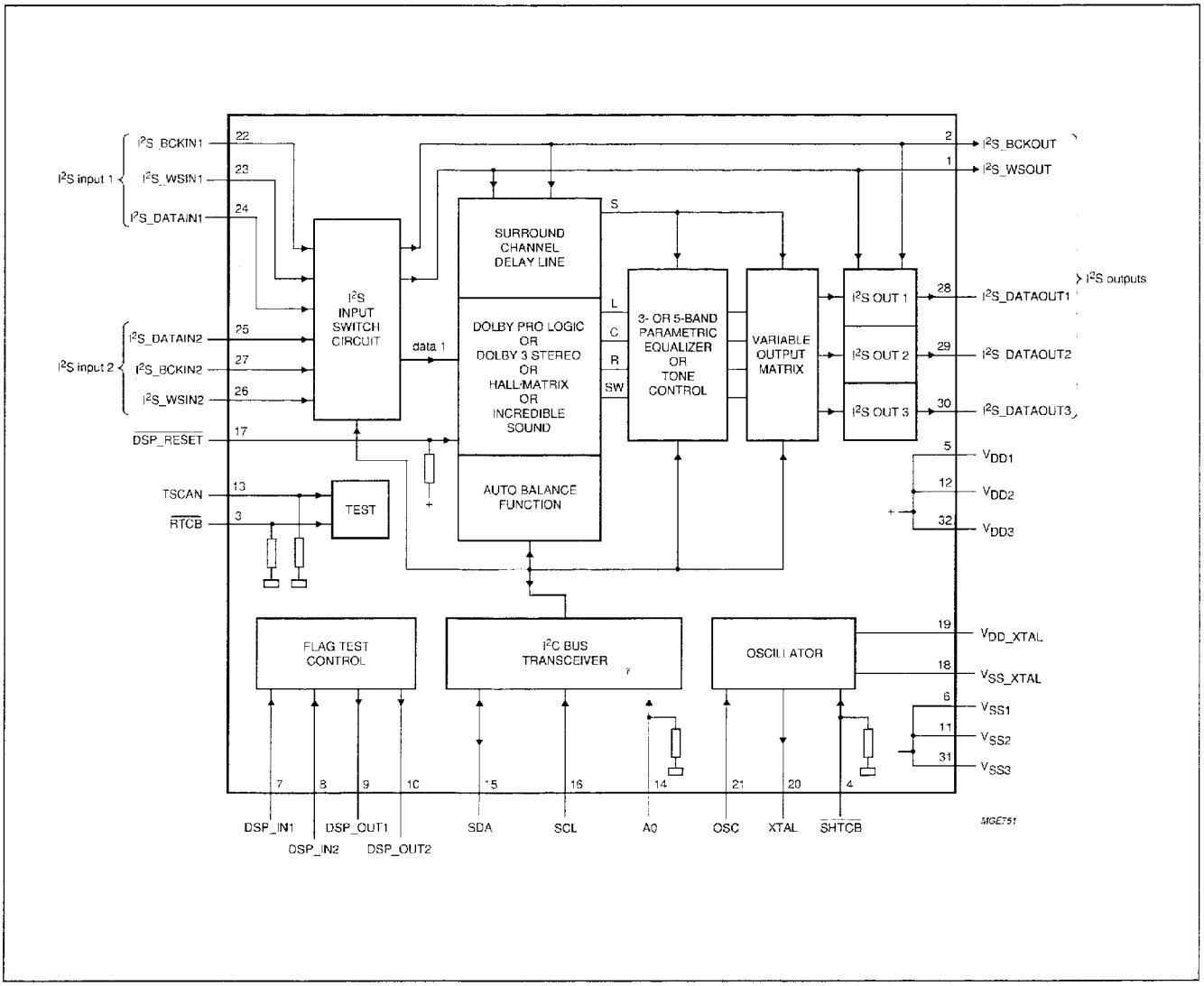
Dolby* Pro Logic Surround; Dolby 3 stereo; Incredible Sound

GENERAL DESCRIPTION

The SAA7710T chip is a high quality audio-performance digital add-on processor for digital sound systems. It provides all the necessary features for complete Dolby Pro Logic surround sound on chip. In addition to the Dolby Pro Logic surround function, this device also incorporates, a 5-band parametric equalizer, a tone control section and a volume control. Instead of Dolby Pro Logic surround, the Hall/matrix surround and Incredible sound functions can be used together with the equalizer.

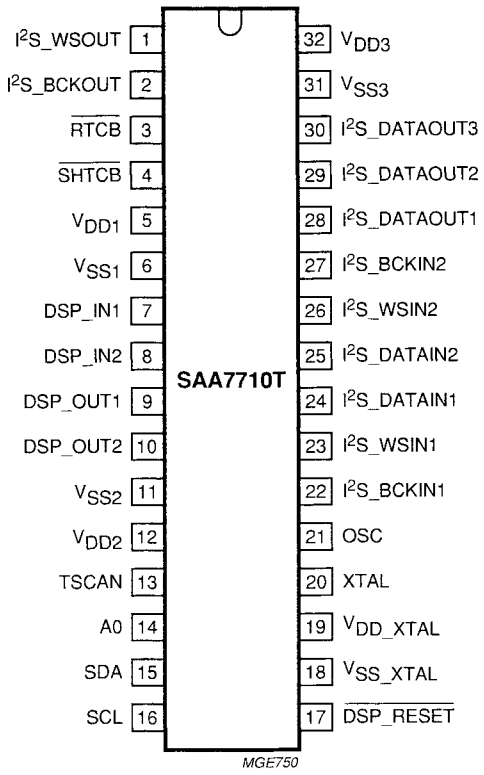
SAA 7710T

BLOCK DIAGRAM



Functional modes

The device supports three main modes, Dolby Pro Logic/Dolby 3 stereo or hall/matrix surround or Incredible sound mode. All modes can be combined with equalizing (5-band)



THE DOLBY PRO LOGIC MODE

In Dolby Pro Logic mode, several blocks must be initialized and controlled during operation:

- Noise generator and noise sequencer
- Centre channel mode (normal, phantom, wide, off)
- Surround channel delay time

Possible post-processing modes for Dolby Pro Logic are:

- Volume control only
- Equalizer (5-band on L, C and R); variable output matrix; volume control

THE DOLBY 3 STEREO MODE

In Dolby 3 stereo mode, several blocks must be initialized and controlled during operation:

- Noise generator and noise sequencer
- Centre channel mode (normal, phantom, wide and off)

THE HALL/MATRIX SURROUND MODE

- Hall or matrix surround Mode setting
- Surround channel delay.

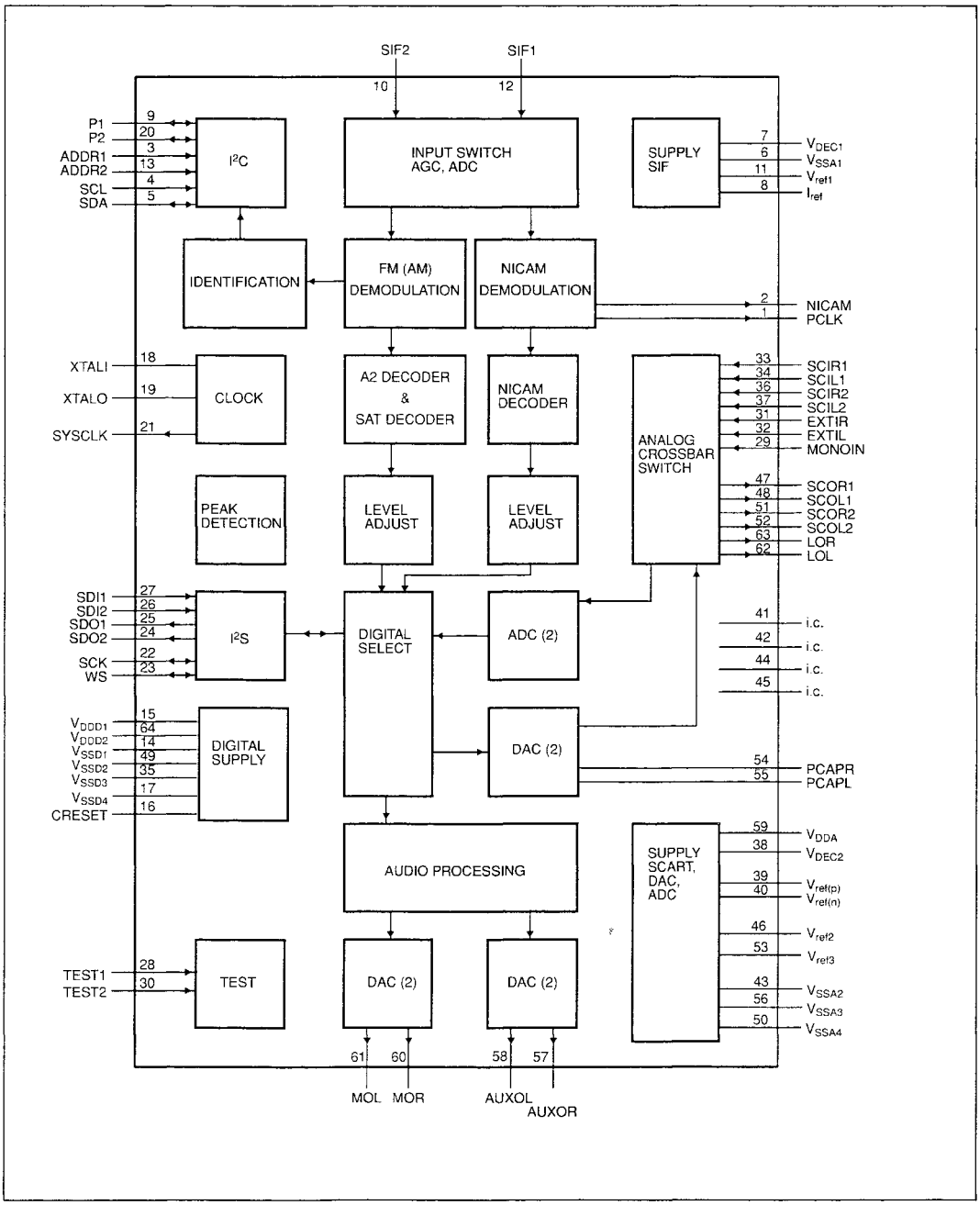
Digital TV sound processor (DTVSP)

GENERAL DESCRIPTION

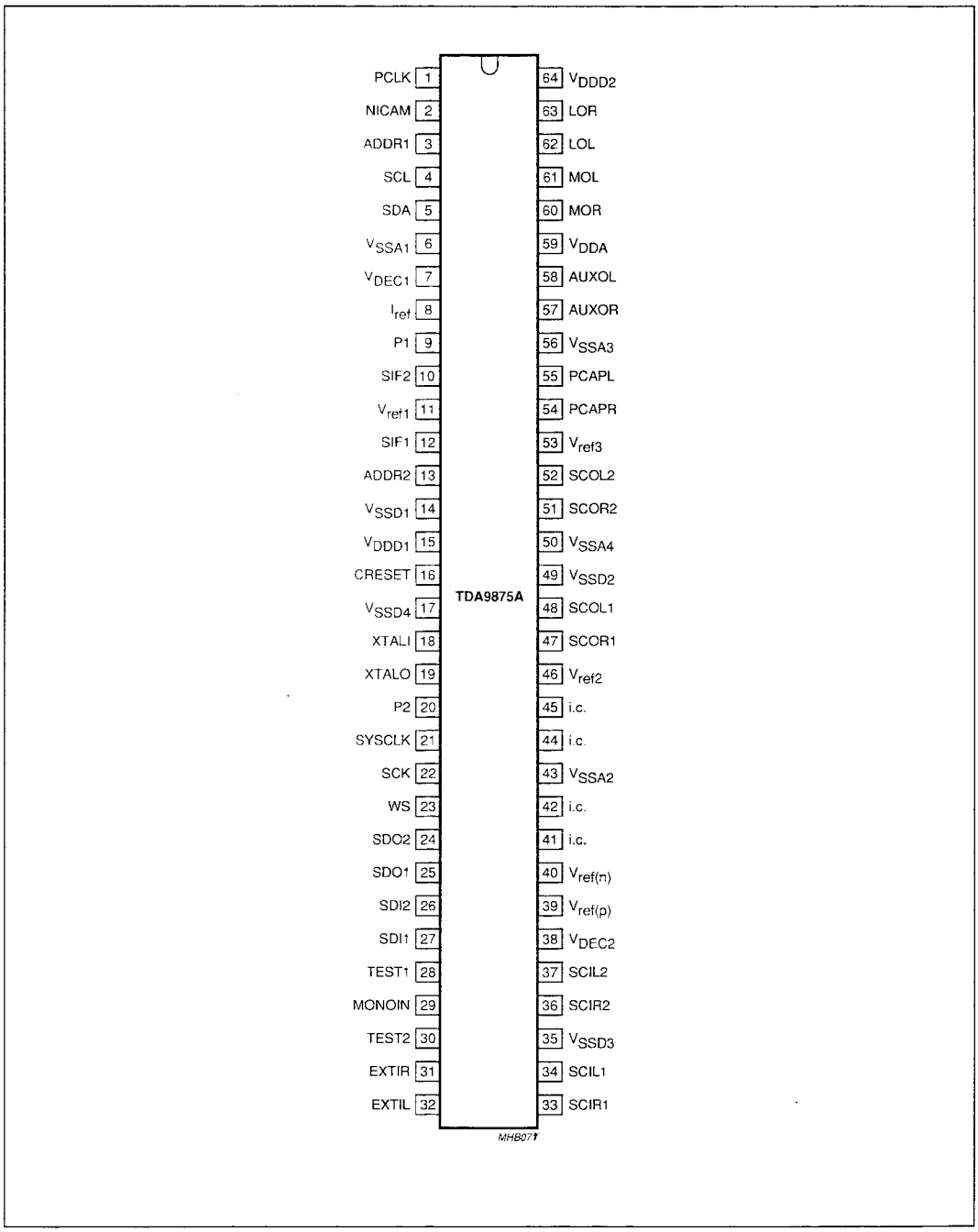
The TDA9875A is a single-chip Digital TV Sound Processor (DTVSP) for analog and digital multi-channel sound systems in TV sets.

TDA9875A

BLOCK DIAGRAM



Pin configuration:



11.2 SERVICE MENU DESCRIPTION

7	6	5	4	3	2	1	0

OP 0

Bit Nr.		Meaning		
7	----------	Menu type	0: Solid OSD, 1: Meshing OSD	
6, 5	----------	Tuner type		
		00: Siel		
		01: TFK 3402		
		10:		
		11:		
4	----------	Headphone	0: No	1: Yes
3	----------	Txt	0: No	1: Yes
2	----------	Nr. Of scarts	0: 1 scart	1: 2 scarts
1, 0	----------	Channel table:		
		00: BG only		
		01: I only		
		10: BG-DK		
		11: BG-LL'		

7	6	5	4	3	2	1	0

OP 1

Bit Nr.		Meaning		
7	----------	Subwoofer	0: No	1: Yes
6	----------	IF selection	0: 38.9 Mhz.,	1: 38.0 Mhz.
5	----------	Prog. Storage Time	0: 3 sec.	1: 30 sec.
4	----------	Text Language	0: East	1: West
3	----------	Ext. Spkr	0: No	1: Yes
1, 2	----------	OSD Language		
		00: English		
		01: Turkish		
		10: German		
		11: French		
0	----------	Channel type	0: No	1: Yes

CONVERGENCE ADJUSTMENTS

Note: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

• Centre Convergence Adjustment

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 16) and superimpose red and blue vertical lines in the centrel area of the picture screen. (See figure).
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3,4,5 to ensure best convergence, the adjustment must be undertaken with great care because of the interaction between 4 and 6 pole magnets.

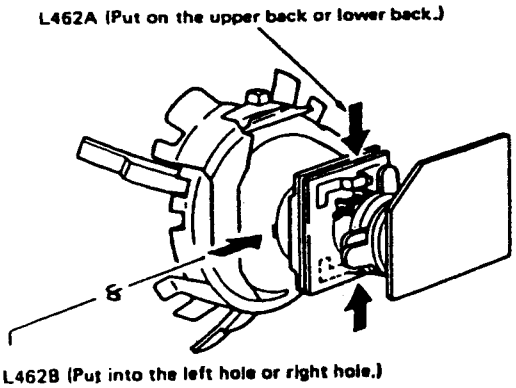
• Circumference Convergence Adjustment

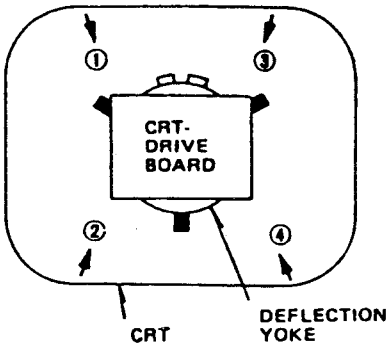
1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Put a wedge as shown in figure 15 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick 3 adhesive tapes on wedges.

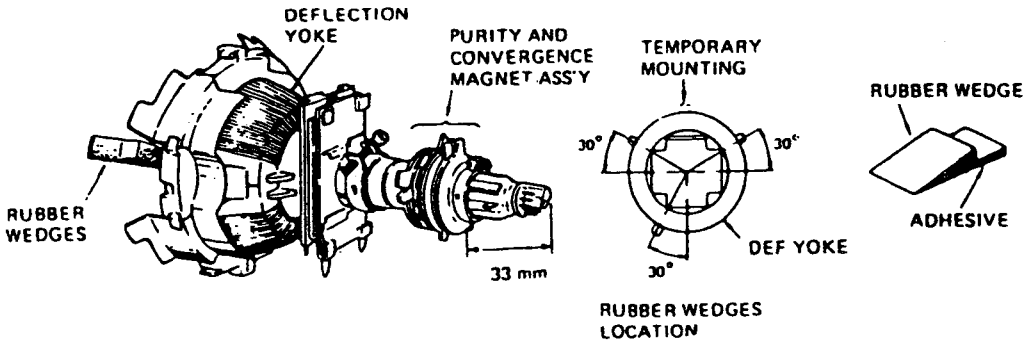
CONVERGENCE COMPENSATOR

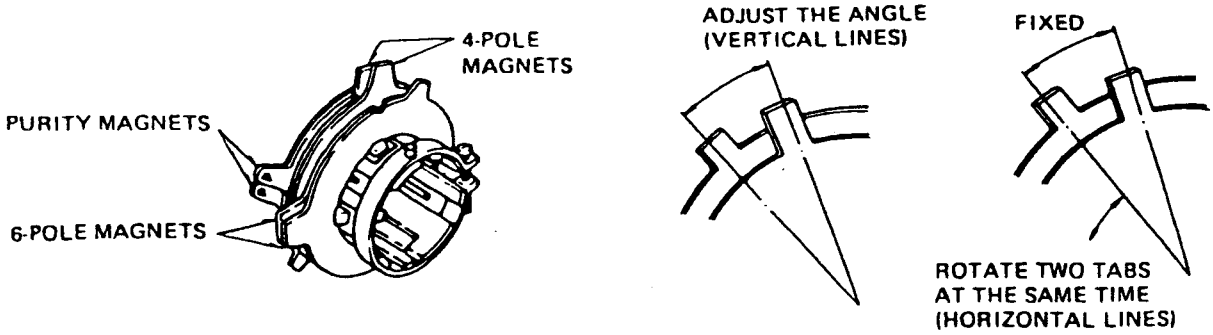
Compensators L462A and L462B are used to correct misconvergence (Red-Green) at the top center or bottom center on screen, when the misconvergence is still evident even though the yoke adjustment is tried. Compensator L462C is also used to correct misconvergence (Vertical shift of Red or Blue) at four corners on screen.

1. To correct horizontal misconvergence (Red-Green), put compensator L462A on the yoke back (see figure right) to find a position for minimizing misconvergence. Mark the position and remove protective paper on the rear of L462A to stick it in place. Apply adhesives on buth yoke and L462A.
2. To correct vertical misconvergence (Red-Green), put the tips of compensator L462B into either of the holes on the yoke core and apply adhesives.
3. To correct up or down shift of Red at top right or bottom right corner, put compensator L462C at point 1 ve 2 or the pisture tube (see figure right.) to find a position for minimizing misconvergence. Mark the position and remove protective paper on the rear of L462C to stick it in place.



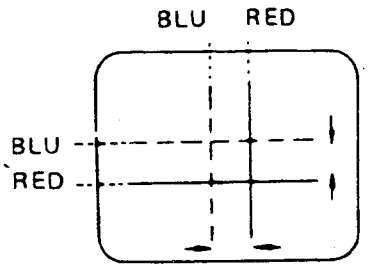




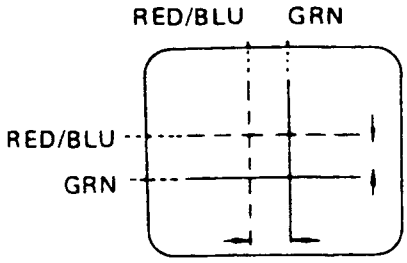


CONVERGENCE MAGNET ASSEMBLY

ADJUSTMENT OF MAGNETS

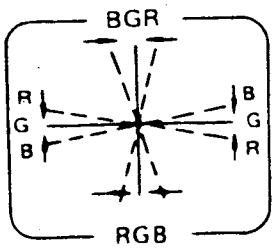


4-POLE MAGNETS MOVEMENT

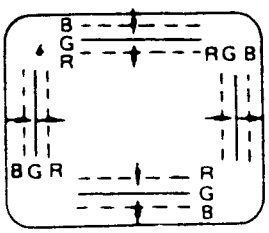


6-POLE MAGNETS MOVEMENT

Centre Convergence by Convergence Magnets



INCLINE THE YOKE UP (OR DOWN)



INCLINE THE YOKE RIGHT (OR LEFT)

Circumference Convergence by DEF Yoke

Dot Movement Pattern